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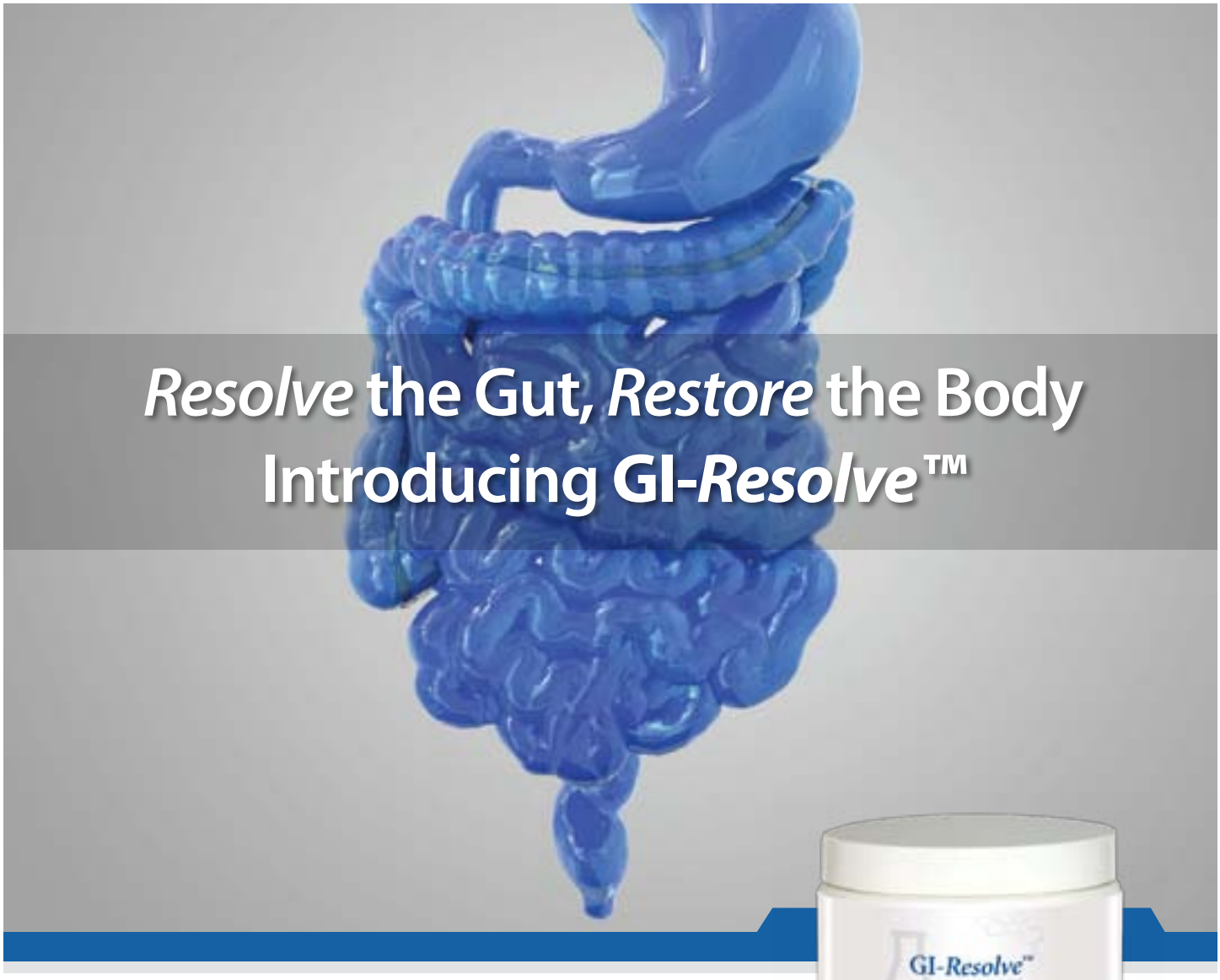

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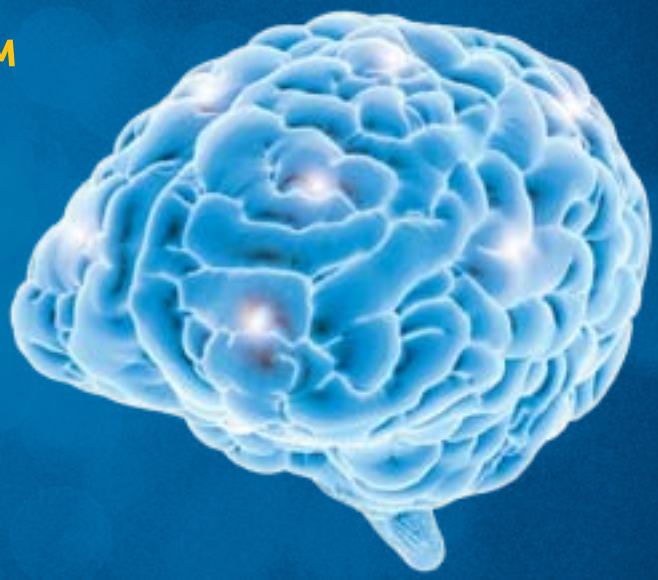

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From the Publisher

Is It Time to Steer Alcoholics into Medical Treatment and Away from 12-Step Programs?

For more than 70 years, treatment for alcoholism has focused on counseling and 12-Step programs. Although alcohol addiction was known to cause medical pathology, such as cirrhosis and pancreatitis, habitual drinking was thought to be a problem of moral weakness. Something in the individual's character debased one's will, causing the individual to drink to excess. Up until the 1940s teetotalers beseeched drinkers to pull themselves up by their bootstraps and simply stop drinking. Around that time period an

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➤ *continued from page 6*

alcoholic, Bill Wilson, developed a prototype of a step program that asked individuals to admit their powerlessness, seek help from a higher power (usually God), search and find their hidden faults and weaknesses, ask God to dispose of them, apologize to those they have hurt, and seek to maintain their improved morality by staying attuned with God. Wilson's 12-Step program became the backbone of Alcoholics Anonymous (AA). Individuals who participated ardently and fastidiously agreed to stop their drinking and were empowered to remain abstinent. Similar 12-Step programs were established for other addictions such as Narcotics Anonymous.

However, despite the moral and spiritual cleansing that members achieved or sought to achieve by participating in such programs, addictive craving for alcohol and drugs did not disappear for a majority. In fact, cravings for alcohol and drugs were persistent despite the strongest of will power. By one estimate, 95% of individuals who joined AA in January of a given year were no longer participating in December. It is not that the 12-Step program is unworkable or intolerable (although some complain about its dependency on a higher power). It is that counseling and 12-Step work does not banish alcohol or drug cravings. The cravings are mediated by one's neurochemistry – if the neurochemistry is abnormal, cravings continue and cannot be stopped by will power.

In the 1980s a drug was developed that had opioid-receptor antagonist activity. That drug was naltrexone. Naltrexone's anti-opioid activity made it an early treatment for opioid addiction. Other drugs have been shown to be more effective in treating opioid dependency. However, naltrexone was a very effective agent in decreasing the craving for alcohol. Extensive research in Europe and the US during 1990-2010 has found that naltrexone very effectively curbs the craving for alcohol in a majority of treated alcoholics. The use of naltrexone to treat alcohol dependency has been popularized as the Sinclair Method (TSM). Naltrexone has essentially no major adverse effects and the craving for alcohol is substantially curbed enabling the drinker to reduce alcohol consumption 50-100% without difficulty.

What is shocking is that despite the success of this treatment approach, the Sinclair Method is largely ignored in the addiction community. It is not encouraged by AA, alcoholism counselors, and even alcoholism treatment centers. The medical profession is largely ignorant of it, and it is "below the radar" for public seeking answers. The time has come for the medical profession to declare that alcohol dependency should be treated medically and not by 12-Step or counseling. Addiction deserves to be approached medically just like any other physical condition.

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It's a Small World: Making Every Child Obese and Diabetic

Like many of you, I was enchanted when I saw the "It's a Small World" exhibit at the 1964 New York World's Fair. The ride accompanied by the song of the same name is a mainstay at all of Disney's entertainment parks. Too bad that world strife, disease, and poverty cast a dissonant image to the theme park's exhibition and tune. And while we argue over the cause of the world's steadily rising average Fahrenheit, nature or man, there can be little argument that processed, sugary, trans-fat foods are making children worldwide fat and pre-diabetic. It's a small world, indeed, one that will suffer and need medical care that is largely of our own creation. For once, when one asks what caused this illness and condition, there can be no confusion – it's what we put into our mouths.

One would hardly think that junk food has made its way into the backwaters of the Amazon, but, yes, it's there. Closer to the Brazilian coast a woman, aged 29, is one of many street vendors hired by Nestle, the international food conglomerate, to sell and deliver packaged foods to families. She took a turn at selling Avon but her clients were not able to pay her. "Food" from Nestle is something everyone wants, especially sugary puddings, chips, and other candied foods, and everyone has the money for food. While processed foods have had sales plateau in the US and Europe, the developing world is ripe for new market share. And young women, mothers selling packaged foods to women in their communities, know when families receive their paychecks or government allowances. It's a win-win: the women vendors (and Nestle only allows women to be vendors) bring home income to buy a refrigerator and other appliances while Nestle has a profitable increase in their bottom-line worldwide. Too bad that processed foods are making children and adults obese and diabetic. But one has to eat, right? Despite efforts by government agencies to reign in the consumption of sugar and trans-fat, the price is right, and families are not interested in spending hours cooking traditional meals. So, in Brazil the fast-food network is not only carried out at storefronts like McDonald's but also through direct sales at the house. And business is most definitely booming.

A similar scenario is unfolding in India, the Philippines, in West Africa, China and elsewhere. It may not be female vendors working for Nestle, but packaged sugary foods are being distributed throughout the world. The rate of obesity has notably exploded in the US in the last 30 years. Similarly, obesity is escalating in Europe as well as in South America, Africa, and Asia. We have succeeded in becoming a junk-food nation, now we are a junk-food world. As Julia Ross writes in

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From the Publisher

➤ *continued from page 10*

the cover story for this issue, we now crave junk food as much if not more than any other drug. We need a solution to the craving and Ross's work offers a strategy we must incorporate into our practices to curb our obsession with sugar and fat. It may very well be that Ross's approach is what we need to make our world smaller!

Bioenergetic Medicine Diagnostics and Grounding to Reduce Pain!

Of all the aspects of integrative and holistic medicine, the area that has always given me the most trouble appreciating and understanding has been bio-energetic medicine. We use this term as a rubric for many different techniques and methods. At the crudest level many practitioners and even more patients employ "muscle testing." Using a variety of techniques, some testing assesses muscle strength changes, some captures movement changes like a pendulum--"kinesiology" is used to test whether a supplement should be taken or a food eaten. The question that often arises is whether the testing may be interfered with by an unsuspected bias of the examiner. Some practitioners use sophisticated energetic devices such as EAV, Electroacupuncture According to Voll, or similar instruments to make "energetic" diagnoses and/or therapeutic decisions. There is a certain degree of impartiality or lessened bias when electronic devices are employed – to a large degree the bias of the practitioner and patient is removed from the signaled energy field that is deemed to be problematic. However, the question remains as to how verifiable energetic diagnoses are especially when specific viruses and toxins are identified.

Many practitioners are concerned about such biases that show up in crude testing techniques. Subsequently "refined" methodologies have been developed to counter and minimize false bioenergetic diagnoses and treatments. In this issue Dr. Reimar Banis, MD, PhD discusses "20 Years of Psychosomatic Energetics." Bannis, a Swiss physician who has had extensive experience in bioenergetic medicine, developed Psychosomatic Energetics in 1998. A unique aspect of Psychosomatic Energetics (PSE) is its focus unblocking emotional conflicts. Such an approach is critical for restoring not only mental health but also physical well-being. Banis and colleagues have also reviewed, in previously published articles in the *Townsend Letter,* the effectiveness of PSE.

While grounding is not a diagnostic technique, its methodology appears to be the quintessential bioenergetic medicine. At its most basic level grounding is walking or sitting on the ground permitting energy from the earth to come into the body unimpeded by shoes and flooring. Grounding investigators believe that it is the free flow of electrons into the body that acts as a healing process necessary to counter the free radicals that build up, living as we do in our houses, offices, and cars. The key symptom that most individuals experience when nature's electrons are not

free to neutralize our internal stagnant energetics is pain. We use pharmaceuticals and physical methods to reduce pain but drugs, particularly opioids, fail to resolve chronic pain issues.

In this issue James Oschman, PhD, Stephen Sinatra, MD, Gaetan Chevalier, PhD, and Martin Zucker write about grounding. Of course, most individuals do not have the time nor the wherewithal to take 45 minutes to walk around barefoot outside. Fortunately, grounding can be done quite comfortably and easily while we are asleep. The strategy requires that we need to be able to create a flow of energy from the earth outside to our bodies. Pads, mats, and sheets can be connected to properly grounded electrical plugs, and grounding can be accomplished. Such a simple technique deserves a trial, especially in any individual experiencing chronic pain!

CBD and THC Efficacy in Pain Management

Marijuana has long been touted as being an effective natural remedy for pain. Long-standing illegality of its use has prevented more widespread appreciation of its pain-relieving benefit. Additionally, there has always been a trade-off between its symptomatic benefit versus a generally non-desired cognitive, disorienting euphoric "high." Nevertheless, THC has been remarkably effective in a wide number of medical conditions justifying medical use of marijuana. In this issue, Robert Gorter, MD, PhD, an immune system expert at the UCSF, reports on the role of "Cannabis in Pain Management." Gorter has observed that a cohort of HIV patients who succeeded in staving off the ravaging of AIDS had the common use of smoking marijuana at least three times weekly. Gorter's work ultimately focused on cancer and here too marijuana has been very effective in lessening the need for opioids, reducing the nausea and emesis associated with chemotherapy, and providing better pain control compared to opioids alone. Gorter reviews the research supporting marijuana's use in pain management.

Chris Meletis, ND, and Kimberly Wilkes examine "Endocannabinoids, Phytocannabinoids, and Palmitoyl-ethanolamide's Role in Pain Management" in this issue. Meletis and Wilkes describe the physiology of the endocannabinoid system and pain. THC and CBD operate on endocannabinoid receptors differently and that difference provides a reason for combining THC and CBD treatment in managing pain. Meletis and Wilkes provide the rationale for deciding how to use both.

Jonathan Collin, MD

Pathways to Healing

by Elaine Zablocki

How to Live With and Move Beyond Chronic Pain

Sarah Anne Shockley was an active, athletic person until 2007, when her life suddenly changed. One day she left for work and by the time she got there, she was in so much pain she had to turn around and go back home. She saw a chiropractor, who referred her to a neurologist. "It turned out that I have thoracic outlet syndrome, which refers to a collapse between the clavicles, collarbones, and the first ribs," Shockley recalls. "In that space you have the large scalene muscle of the neck, nerves and arteries – they all get compressed and squashed. It is incredibly painful and debilitating. Virtually overnight everything stopped."

Shockley lived with intense pain for a year, expecting that if she just gave it time, it would get better. Towards the end of that first year, one of her doctors explained that her condition was unlikely to get better; in most cases it would probably get worse. "It hit me like a ton of bricks," she says. "It feels like a life sentence. It is incredibly shocking."

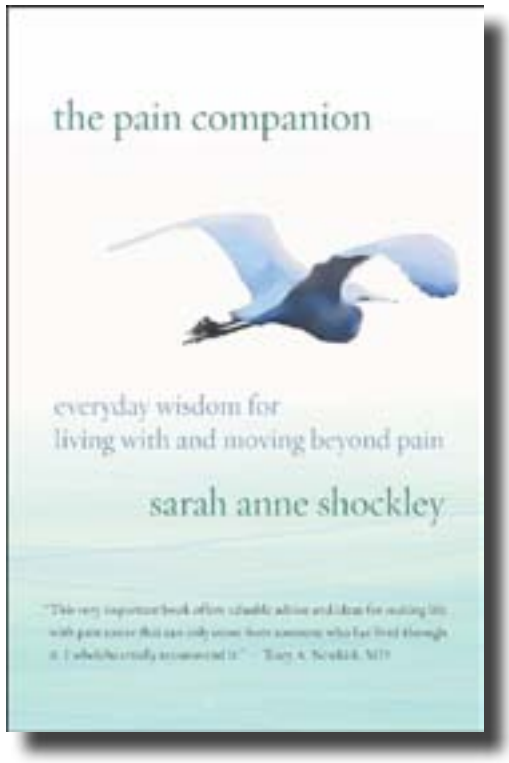
This is an extremely difficult moment. Shockley says it is important to allow ourselves to feel those feelings, to experience devastating emotional loss. "If we don't allow ourselves to come to grips with the emotional aspects of the experience, we can begin to slide into depression," she says. "The physical pain is so demanding, so intense, that we naturally focus on that. We often don't have attention available for what is happening in our emotional lives."

Our usual reaction to a difficult medical diagnosis is to gear up for battle. We want to overcome, we set goals, we intend to win. But these methods, which are appropriate in our ordinary lives, may not be effective when coping with chronic pain. "My advice in this situation is to pull back from the battle line and relax a bit more," Shockley says. "Fighting turns out to be exhausting, physically and emotionally. It becomes a stalemate. I would advise someone to take the energy you'd put into fighting pain and direct it to a more positive relationship with pain."

Often our first response to pain is to hold the breath, contract, tense up. Shockley noticed that whenever she contracted, there was an immediate response – her pain got worse. She learned to relax. "It's really difficult to relax around pain," she says. "I realize I'm suggesting something that isn't easy to do. However, this ties in with allowing pain to be something other than an enemy. If we can consider pain as a messenger, then we can begin to relax around the pain and paradoxically pain levels go down."

Many people with pain have difficulty sleeping. For Shockley, what works well is to be with the experience. "I would just let it be okay. I'm awake for the moment, so let's see what's happening. I might open the window and listen to the breeze or the night birds. Relax and reassure yourself, it's okay.

Living with intense chronic pain means Shockley has learned to spend time being with herself, doing nothing. This doesn't come naturally for her! "I'm a very active person. At first it was depressing and lonely and awful – it seems that life just stops," she says. "In a sense it forced me to confront myself. We spend so much time rushing around doing, doing, doing. Pain brings you right down to the essence of yourself. I learned to become more comfortable with myself. I was very self-critical, and I let go of that. Sometimes I think pain is asking for us to be softer, more compassionate."



New Book Offers Methods for Living with Pain

Now, after more than a decade of living with pain, Shockley has published *The Pain Companion: Everyday Wisdom for Living With and Moving Beyond Chronic Pain*. She writes:

I cannot know your personal suffering, of course; only you can. But I do understand the experience of being in significant and relentless pain for long periods of time, and I understand the fear, sadness, and frustration associated with long-term physical debilitation. So I can say that this book has been written from inside of pain, a perspective on the experience and the healing of pain that we are seldom offered.

The book is divided into four parts. "Pain Moves In" explores the ways physical suffering affects lives and shines a light on how pain can move in and take over one's experience. "The Emotional Life of Chronic Pain" addresses the deep and persistent fears, anxieties, sadness, anger, and shame that are a part of living with chronic physical pain. It offers simple, practical steps to help ease these psychological and emotional consequences of living with pain. "Meditative Approaches to Physical Pain" describes eleven meditative exercises Shockley uses to help open a path to physical relief and release. In "When Pain Is the Teacher," Shockley shares important life lessons she has learned to support living life with more ease, grace, and wisdom.

Shockley has also developed a website with several useful downloadable tools, including the following:

- Pain Diary Template to monitor specifics of daily pains, track usefulness of medications and physical therapy.
- Statement for Practitioners – a model statement to take to practitioners when someone feels they are not being heard or understood in their/your pain.
- The Fear Protocol – a method to deal with panic attacks at night, and general anxiety over health and money issues any time.
- Technique for Releasing Difficult Emotions – a meditative technique to be used any time strong, difficult, or unexpected emotions arise.
- Helping Family & Friends Understand Your Limits – ways to clearly communicate how pain affects a person's ability to interact and participate, in order to be understood and get receive needed support.

Celebrating Small Changes

Shockley has explored many methods for relating to pain and taking time to heal. She also had to accept that she could not return to her previous state of activity and health. "I've been in this for over ten years now, so I've had time to explore different methods and find what works and what doesn't," she says. "It's a paradox, but I find that the more we pull back from the battlefield and allow pain to be our condition, be softer with it, the sooner it begins to relax and move on."

She finds her pain levels are much better now than they were two or three years ago. She used to do martial arts, but now that's impossible. Very slowly, over the last year, she has started to do a light form of tai chi. "I've learned to live within my limitations," she says. "You understand that if you do one thing now, you're not going to be able to do something else later. You make your choices. Slowly I've been able to regain a lot of ground and do things that were impossible during the first year or two. When you find yourself coping with pain over a long time, the smallest changes are huge, and you celebrate them."

Resources

The Pain Companion: Everyday Wisdom for Living with and Moving Beyond Chronic Pain (New World Library, 2018).

Website: https://www.thepaincompanion.com/
This is a remarkably complete, useful website. It includes book recommendations, links to blogs on chronic illness and chronic pain, links to professional organizations, and recent articles by Shockley.

Elaine Zablocki is the former editor of CHRF News Files.

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Shorts

briefed by Jule Klotter
jule@townsendletter.com

Exercise, Clock Genes, and Sleep

Yujiro Yamanaka and colleagues found that the time of day that exercise takes place changes its effect on the autonomic nervous system. The Japanese research team enrolled 22 healthy, young males for their study; seven acted as the control group, seven randomized into a morning exercise group, and eight were in the evening exercise group. Participants lived in a facility under dim light conditions (10 lux measured from the forehead), ate three meals at set times, and followed a strict sleeping schedule: "To adjust the sleep-wake cycle among the subjects in reference to the circadian cycle, the times of retiring to bed and wake-up were fixed in such a way that the retirement time should be 4 h before the melatonin peak and sleep length should be 8 h." Blood samples, from an indwelling catheter in the forearm, were taken hourly during the first and last 24 hours and every two hours for the remainder of the study to examine the circadian peak phase of plasma melatonin. During the 16-hour waking period, participants filled out a questionnaire and took a performance test on the computer every two hours. Smoking, napping, and physical exercise (unless scheduled) were prohibited by all participants, but they could read books, watch videos, and listen to music.

Beginning on day three, participants in the exercise groups performed interval exercise with a bicycle ergometer for two hours. The morning group began to exercise three hours after waking, and the evening group began exercising 10 hours after waking. This schedule continued through day 6.

The researchers found that heart rate (HR) significantly increased during sleep in the evening exercisers, but not in the morning exercisers: "Since HR is stimulated by the sympathetic nerve activation, the evening exercise may continuously stimulate the sympathetic nervous system several hours after physical exercise." In contrast, morning exercise significantly increased heart variability frequency during sleep, indicating increased cardiac parasympathetic activity. "The present results lead us to the hypothesis that although physical exercise stimulates, in general, the sympathetic nervous system, the activity of autonomic nervous system changed afterward depending on the time lapse," the authors write. This study indicates that morning exercise improves the quality of nighttime sleep (and healing) by increasing parasympathetic nerve activity.

Yamanaka et al suggest that the autonomic nervous system itself might be responsible for the time-dependent effect of physical exercise. However, it may also be linked to the 'clock genes' in muscle tissue. Although the primary circadian pacemaker resides in the hypothalamus, organs throughout the body – including skeletal muscle – have clock and clock-controlled genes that display circadian rhythms. "Physical exercise is a nonphotic stimulus that can realign the skeletal muscle circadian system to the central clock, imposing a new rhythm at the organism level," write Gerardo Gabriel Mirizio and colleagues. "This effect may be crucial to prevent or ameliorate diseases and disorders caused by disruptions of circadian rhythms."

In their 2018 review article, Mirizio et al cite animal studies that show clock-gene expression increases with physical activity. Not only does this gene expression affect circadian rhythm, it also affects muscle function and metabolism: "Given that skeletal muscle is an essential tissue for energy metabolism homeostasis, it is not surprising that skeletal muscle circadian activity and metabolic processes are closely integrated." Chronic circadian disruptions are linked to altered lipid profiles and/or insulin resistance.

Understanding how the clock genes work and the role of physical activity is an on-going process. But scheduled physical exercise early in the day may improve sleep quality – and it will do no harm.

Mirizio GG, et al. the Impact of Physical Exercise on the Skeletal Muscle Clock Genes. *Kinesiology.* 2018;50 Suppl.1:5-18.

Yamanaka Y, et al. Morning and evening physical exercise differentially regulate the autonomic nervous system during nocturnal sleep in humans. *Am J Physiol Regul Integr Comp Physiol.* 2015;309:R1112-R1121.

Tools for Addressing Pain

Katinka van der Merwe, DC, specializes in helping people with complex regional pain syndrome (CRPS). She views people with CRPS and related conditions, such as reflex sympathetic dystrophy (RSD), as being "stuck in sympathetic overdrive" with the parasympathetic arm of the autonomic system being underactive. In a 2016 blog post, van der Merwe outlines three techniques – spinal manipulation, frequency specific microcurrent, and

Quantum Neurology® – she uses in her practice to improve tone and function of the vagus nerve, the primary parasympathetic cranial nerve. Low vagal tone causes inflammation and problems with immune function, digestion, and sleep. Several factors can contribute to poor vagal function, including neck and/or tailbone injuries, toxicity, infections, emotional stress, and genetic factors.

First, Dr. van der Merwe uses spinal manipulation to remove pressure from the vagus nerve. The procedure typically needs to be repeated multiple times over a ten-week period in order for ligaments in the upper cervical spine to learn the correct position. Spinal manipulation to correct vertebral subluxations (dislocations) that put pressure on nerves can improve heart rate variability (HRV), according to a 2017 review article. HRV is a marker for autonomic nervous system health and adaptability and indicates the balance between the sympathetic and parasympathetic systems.

Frequency Specific Microcurrent (FSM), using a device that applies minuscule electric currents, is the second technique. Animal experiments have shown that microcurrents can increase protein synthesis and energy production, but the amperage must be very small. Whereas direct current, between 100 and 500 µamps, applied to rat skin increased ATP levels 300% -500%, current over 5,000 µamps caused ATP production to decline, compared to untreated controls.

Carolyn McMakin, DC, and George Douglas, DC, identified specific frequencies and developed a system for treating multiple conditions, including CRPS and fibromyalgia. Dr. McMakin wrote a 2010 article for *The Pain Practitioner,* based on her clinical experiences, in which she described the use of FSM to reduce neuropathic pain and increase range of motion. An earlier study involving people with fibromyalgia associated with spine trauma showed that FSM significantly reduced inflammatory cytokines, including IL-1, IL-6, TNF-α, and substance P, and increased endorphins – along with decreasing pain.

McMakin uses 40Hz on one channel and 396 Hz on the second channel to reduce neuropathic pain: "The pain begins dropping in minutes and declines in a time-dependent fashion over 30 minutes, requiring a maximum of 60 minutes to reach optimal benefit. Treatment beyond 60 minutes did not produce any additional improvement." After pain is reduced, McMakin addresses range of motion: "Trial and error showed that if the patient was treated with the frequencies 13Hz on one channel and 396 Hz on the second channel while moving the limb (and nerve) to edge of the range, within the limits of comfort, the range of motion would return to normal within 10 to 15 minutes."

Quantum Neurology®, developed by George Gonzalez, DC, who sought a way to treat his wife's spinal cord injury, is the third technique. This patented system for evaluation and correction of neurological weakness uses neurological activation, physical mobilization, and light therapy with an LED device. Quantum Neurology is not viewed as a treatment to cure specific conditions. Rather, the company website states, "The goal with Quantum Neurology® Rehabilitation is to exercise and strengthen the patient's Nervous System....the more efficient the Nervous System, the more able the body can handle the stress of processing and healing."

All three techniques are non-invasive, non-pharmaceutical approaches for helping the nervous system regain balance and heal.

Kent C. Heart Rate Variability to Assess the Changes in Autonomic Nervous System Function Associated with Vertebral Subluxation.
McMakin C. Nonpharmacologic Treatment of Neuropathic Pain Using Frequency Specific Microcurrent. *The Pain Practitioner.* Fall 2010.
Quantum Neurology® Frequently Asked Questions and Answers. https://quantumneurology.com
van der Merwe K. Putting Out the Fire: A Brand New Approach to Treating RSD/CRPS. April 12, 2016. https://rsds.org/new-approach-rsd-crps/.

Chronic Fatigue, Fibromyalgia, and Idiopathic Intracranial Hypertension

Idiopathic intracranial hypertension (IIH) may be an underlying cause of chronic fatigue syndrome and fibromyalgia in some patients, according to two recent articles in *Medical Hypotheses.* In the first article, J. Nicholas P. Higgins and British colleagues hypothesize that chronic fatigue syndrome could be "the most common and least severe" sign of idiopathic intracranial hypertension. Fatigue and headache are primary symptoms for both conditions. Other frequent symptoms that the two conditions share are poor memory, inability to concentrate, low mood, dizziness, muscle and joint pains. Papilloedema, swelling of the optic disc, is the distinguishing sign of IIH; but not all patients with intracranial hypertension develop papilloedema: "...these patients may be clinically indistinguishable from patients with chronic fatigue syndrome," say the authors.

Higgins et al tested for IIH in 20 patients diagnosed with chronic fatigue syndrome and who also suffered with headaches, using lumbar puncture. Ten percent had "unequivocal IIH according to current criteria." The mean craniospinal fluid pressure for the group was high normal (19 cm H2O). "More importantly, we found that, regardless of whether the opening pressure matched IIH criteria, when intracranial pressure was reduced by drainage of CSF, 85% of patients reported an amelioration of symptoms, including fatigue," they wrote. The authors warn that their hypothesis needs controlled clinical trials to determine if IIH truly underlies chronic fatigue syndrome in some patients, particularly those who suffer with headaches.

A Belgium team, led of M. Hulens, reports that radicular pain (stemming from nerve roots) is a "common but under-recognized symptom" in people with idiopathic intracranial hypertension. ➤

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Neuralgic pain is also a defining characteristic of fibromyalgia. People diagnosed with fibromyalgia also experience many of the symptoms found in chronic fatigue syndrome, listed above, such as brain fog and memory problems. Hulens et al theorize that the widespread pain experienced by people diagnosed with fibromyalgia is due to compression of the nerve root fibers, caused by chronic postural idiopathic cerebrospinal hypertension.

Removing cerebrospinal fluid to alleviate symptoms is invasive. Perhaps, the upper cervical chiropractic treatment described by David I. Minkoff, MD, and Julie Mayer Hunt, DC, in their October 2018 *Townsend Letter* article would be an alternative first option. Dr. Minkoff reports that patients suffering from headaches, dizziness, brain fog, memory loss, POTS, and symptoms of autonomic dysfunction have benefited from this treatment.

Higgins JNP, et al. Chronic fatigue syndrome and idiopathic intracranial hypertension: Different manifestations of the same disorder of intracranial pressure? *Medical Hypotheses.* 2017;105:6-9.
Hulens M, et al. Fibromyalgia and unexplained widespread pain: The idiopathic cerebrospinal pressure dysregulation hypothesis. *Medical Hypotheses.* 2018;110:150-154.
Minkoff DI, Hunt JM. A Mystery Answer to Restoring Brain Health. *Townsend Letter.* October 2018.

Electrohypersensitivity and Brain Abnormalities

Gunnar Heuser and Sylvia A. Heuser have observed that people with electrohypersensitivity and those with chemical sensitivity experience similar symptoms, including headaches, cognitive and memory problems, intermittent problems with balance, weakness, and intermittent tremor. Twenty years ago, Dr. Heuser co-authored studies showing consistent abnormalities in brain function (increased activity in the amygdala) among people with multiple chemical sensitivity, using SPECT and PET scans. With the increasing number of patients who are reporting marked reactions to electromagnetic fields (EMFs), he sought to find objective evidence of dysfunction.

For their investigation, ten adult patients with electromagnetic hypersensitivity agreed to have functional magnetic resonance imaging (fMRI) brain scans. They refused PET and SPECT scanning because of the radioactivity involved. Functional MRI shows which tissues are getting more blood flow, indicating increased activity. All 10 reported symptoms that arose with EMF exposure and usually decreased or resolved when they removed themselves from the EMF source. EMFs are emitted by cell phones, cell phone towers, smart meters, power lines, wi-fi, medical equipment, and other devices.

The patients' standard laboratory tests were within normal limits. Other conditions known to cause multi-system complaints, such as thyroid problems, diabetes, and autoimmune disease, were ruled out after careful evaluation. Five of the 10 had a history of head injury, and all but one had a history of chemical exposure.

Although regular MRIs indicated nothing remarkable in these patients, the fMRI brain scans for the 10 patients showed similar abnormalities. Specifically, all showed hyperconnectivity of the anterior component of the default mode in the medial orbitofrontal area. This type of abnormality is also seen in traumatic brain injury, chronic pain, substance abuse, and/or OCD.

This is the first study to look at functional connectivity after exposure to EMF. The authors suggest that fMRIs could be used as a diagnostic aid for evaluating patients who report electrohypersensitivity. They realize that their observations here need to be duplicated by other researchers who can conduct larger studies – which requires funding. No foundation or financial entity provided money for this investigation. The participants paid for their own consultations and testing, except for partial payment from a charity for two patients. Insurance companies did not reimburse these patients for the costs.

Given our ever-expanding exposure to EMFs, the problem of electrohypersensitivity is likely to increase. Documenting consistent changes in brain function among affected people would verify that their symptoms are not a figment of their imaginations.

Heuser G, Heuser SA. Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields.. *Rev Environ Health.* 2017;32(3):291-299.

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Cancer Cell Growth Halted with Cold and Flu Drug

by Honor Whiteman

Originally published by Medical News Today – www.medicalnewstoday.com

"Feed a cold, starve a fever," so the saying goes. The results of a new study, however, suggest that "treat a cold, starve cancer cells" might be a more appropriate motto.

Researchers found that a medication used to ease symptoms of the common cold – called N-acetylcysteine (NAC) – could also help to prevent the growth of cancer cells by depriving them of proteins that are important for their survival. Study co-author Prof. Federica Sotgia, of the School of Environment and Life Sciences at the University of Salford in the United Kingdom, and colleagues recently reported their findings in the journal *Seminars in Oncology*.[1]

Cancer remains one of the biggest health challenges of our time. In the United States, more than 1.6 million new cancer cases were diagnosed last year. In terms of cancer treatment, we have come a long way over recent years. This is reflected in death rates from the disease, which fell by 13 percent between 2004 and 2013. Still, cancer continues to take the lives of more than half a million people in the US every year, highlighting the need for new, more effective therapies.

Prof. Sotgia and colleagues hope that their new research will bring us closer to such treatments, after discovering how NAC could help to halt the spread of cancer cells.

1. Monti D, et al. Pilot study demonstrating metabolic and anti-proliferative effects of in vivo anti-oxidant supplementation with N-Acetylcysteine in Breast Cancer. *Seminars in Oncology.* June 2017; 44(3): 226-232.

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In Memoriam: William James Rea, MD

Dr. William James Rea, 83, beloved husband of Vera M. Andreichuk Rea for nearly 58 years, passed away at home unexpectedly on Thursday, August 16, 2018, in Dallas, Texas. He was born in Jefferson, Ohio, on February 2, 1935, and he was the son of the late Joseph Ulrey Rea and Carrie Cookson Rea. William grew up in Woodville, Ohio, and he was a graduate of Woodville High School, Otterbein College (Westerville, Ohio), and Ohio State University College of Medicine (Columbus, Ohio), in 1962. A rotating internship brought him to Parkland Memorial Hospital in Dallas, Texas, where he continued his medical training by completing residencies in general and cardiovascular surgery at the University of Texas Southwestern Medical School.

After completing his medical training, he served on the faculty of the surgery department before entering private practice for 45 years. He was the Director of the Environmental Health Center – Dallas and the President of the American Environmental Health Foundation. He formerly held the First World Professorial Chair in Environmental Medicine at the Robens Institute at the University of Surrey, in Guildford, Surrey, England, as well as other teaching appointments. He published many articles on cardiovascular surgery and environmental medicine, and he went on to write 10 books, which included medical textbooks on environmental medicine. Currently, two books on electromagnetic frequency (EMF), which he recently completed, are in the process of being published.

Dr. Rea was a member of many organizations including the American Medical Association, the American Academy of Environmental Medicine, and the Pan American Allergy Society. His memory will be cherished by his loving wife, Vera; three sons, Joseph and his wife, Caroline Rea of Idaho; Chris and his wife, Rose Simonian Rea of Dallas along with their three sons, Armen, Tateos, and Serop; Timothy Rea of Dallas, and daughter, Andrea Rea, of Wake Forest, North Carolina as well as sister-in-law Rebecca Rea of Kemptville, Ontario, Canada. Dr. Rea has donated his body to science. Donations in Dr. Rea's memory may be made to the American Environmental Health Foundation, 8345 Walnut Hill Lane, Ste. 225, Dallas, Texas 75231. ◆

Vitamin C Kills Cancer Stem Cells

Vitamin C is up to ten times more effective at stopping cancer cell growth than pharmaceuticals such as 2-DG, according to scientists in Salford, United Kingdom. The research, published in *Oncotarget*, is the first evidence that vitamin C (ascorbic acid) can be used to target and kill cancer stem cells (CSCs), the cells responsible for fueling fatal tumors.

Dr. Michael P. Lisanti, Professor of Translational Medicine at the University of Salford, said: "We have been looking at how to target cancer stem cells with a range of natural substances including silibinin (milk thistle) and CAPE, a honey-bee derivative, but by far the most exciting are the results with vitamin C.

"Vitamin C is cheap, natural, non-toxic and readily available so to have it as a potential weapon in the fight against cancer would be a significant step."

Cancer stem-like cells are thought to be the root cause of chemotherapy resistance, leading to treatment failure in patients with advanced disease and the triggers of tumor recurrence and metastasis (regrowth).

The Salford team set out to assess the bioenergetics of cancer stem cells (CSC) – the processes which allow the cells to live and thrive – with a view to disrupting their metabolism. Focusing on energy-transfer, they measured the impact on cell lines in a laboratory of seven substances, the clinically-approved drug stiripentol, three natural products – caffeic acid phenyl ester (CAPE), silibinin, and ascorbic acid – and experimental pharmaceuticals, such as actinonin, FK866, and 2-DG.

While they found that the antibiotic actinonin and the compound FK866 were the most potent, the natural products also inhibited CSC formation, with vitamin C outperforming 2-DG by tenfold in terms of potency.

Vitamin C has previously been shown to be effective as a non-toxic anti-cancer agent in studies by Nobel Prize winner Linus Pauling and was recently shown to reduce mortality by 25% on breast cancer patients in Japan. However, its effects on CSC activity have not been previously evaluated; and in this context, it behaves as an inhibitor of glycolysis, which fuels energy production in mitochondria, the "powerhouse" of the cell.

Dr. Gloria Bonuccelli, lead author, and another member of the Salford team added: "This is further evidence that vitamin C and other non-toxic compounds may have a role to play in the fight against cancer.

"Our results indicate it is a promising agent for clinical trials and as an add-on to more conventional therapies to prevent tumor recurrence, further disease progression, and metastasis."

Bonuccelli G et al. NADH autofluorescence, a new metabolic biomarker for cancer stem cells: Identification of Vitamin C and CAPE as natural products targeting "stemness." *Oncotarget*. 2017.

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The Coffee Recommended for People with Chemical Sensitivities

by Steven M. Helschien, DC

"The Coffee Recommended for People with Chemical Sensitivities" is one in a series of articles, written to educate the healthcare community about the science behind the healthy benefits of coffee.

Introduction

We are exposed to an astounding amount of pollution daily. About 80,000 chemicals have been introduced into the world in the last century, but only a fraction of those have been tested for safety.

Toxins are everywhere in our environment. They are in our food, water, air, home goods, cleaning agents, pest control products, and more. They all add to the total "toxic load" on our bodies. The greater the toxic load, the greater the risk of developing an autoimmune or inflammatory reaction or disease.

To help combat toxic load and chemical sensitivities, the body needs to function optimally for good health. Optimal health is defined by many health experts as eating a healthy diet rich in nutrients and free of toxins, drinking clean water, exercising, practicing stress management, having a connection to community, and continually feeling there is meaning in your life.

One way to cut the toxins in your diet is to eat organic foods and drink organic coffee. The numerous antioxidants in coffee make it a superfood that can reduce inflammation, thereby decreasing the risk of diseases related to inflammation, such as cancer, cardiovascular disease, and autoimmune disease. Many people don't realize that many coffees have harmful chemicals, such as pesticides, as well as molds, toxins and mycotoxins. Everyone, and especially those with chemical sensitivities, can benefit from drinking coffee that is free of chemicals and toxins and rich in healthy antioxidants.

Chemical Sensitivities, Allergies, and Autoimmune Diseases on the Rise

The Centers for Disease Control's *Fourth National Report on Human Exposure to Environmental Chemicals,* issued in 2009, found an average of 212 chemicals in participants' bodies they tested. Seventy-five of the chemicals had never before been measured in the US population.[1]

The Environmental Working Group, a non-profit environmental organization that specializes in research and advocacy to protect public health and the environment, examined the umbilical cord blood of children just as they were born. They found, on average, 287 industrial chemicals, including pesticides, phthalates, dioxins, flame-retardants, Teflon, toxic metals, and more.

Dr. Douglas Kerr, MD, PhD, professor at Johns Hopkins School of Medicine, says this about environmental toxins and autoimmune disease: "There is no doubt that autoimmune diseases are on the rise and our increasing environmental exposure to toxins and chemicals is fueling the risk. The research is sound. The conclusions, unassailable."

Chemical sensitivity is when the immune system becomes hyperactive and sensitive when constantly assaulted by toxins and chemicals. If not abated, the overstimulation can become an allergy and the allergy can eventually transform into an autoimmune disease.

Chemical Sensitivity

According to Johns Hopkins Environmental Medicine, it is known that chemicals cause many human diseases.[2] Exposure to chemicals may cause reactions similar to those experienced with allergies. Synthetic and natural substances that can produce reactions include the following:

- Molds in the environment,
- Air pollution,
- Tobacco smoke,
- Carbon monoxide poisoning,
- Lead,
- Radon,
- Asbestos,
- Kepone,
- Dibromochloropropane,
- Plants and crops treated with pesticides and herbicides,
- Processed foods treated with preservatives and other chemicals,
- Electric and magnetic fields,
- Home goods, such as carpeting and paint,
- Plastics, and
- Perfumes.

Some people have sensitivities to a wide variety of environmental triggers. These people have what's been termed "multiple chemical sensitivities" or "idiopathic environmental intolerance." Multiple chemical sensitivity symptoms

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Coffee for Chemical Sensitivities

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may include headaches, asthma, rashes, muscle and joint aches, fatigue, memory loss, and confusion.

Many Coffees Have Harmful Chemicals and Toxins

Multiple studies have shown that coffee is a superfood, containing vast amounts of nutrients and antioxidants – phytochemicals and phenols.[3] It contains more antioxidants than any other food, including berries, dark chocolate, and kale. The antioxidants in coffee provide many health benefits, including preventing disease and increasing cognitive function. But that's if the coffee is high grade and produced to retain nutrients and antioxidants. If not, the coffee will usually contain unhealthy chemicals and compounds, due to poor-quality farming, handling and roasting methods. These unhealthy chemicals and compounds can be found in many leading brands of coffee. As a result, many consumers experience negative side-effects from these coffees. Those with chemical sensitivities may experience more severe reactions to the unhealthy chemicals and compounds found in many coffees.

Unfortunately, studies show that most coffee beans that have not been organically grown and properly sourced, processed, roasted, and tested contain harmful chemicals, molds, mycotoxins (the toxic substances produced by some types of mold), pesticides, and herbicides.

Coffee is one of the foods that is most susceptible to contamination by mycotoxins, and most coffee producers do not *routinely* test for these contaminants at every stage. Studies have shown that most conventional coffees test positive for pesticides and herbicides and can test as high as 60% for mold. A study published in the journal *Food Control* indicates that mycotoxin contamination could be widespread in commercially available coffees.[4]

Coffee Mold, Pesticide Allergy and Sensitivity Symptoms

The symptoms of coffee mold or pesticide allergy or sensitivity are similar to that of other allergies and sensitivities. The severity of symptoms depends on the individual. These symptoms can include irritated eyes, throat, mouth; runny nose; wheezing; skin rash or eczema; headache; fatigue; gastrointestinal upset; and diarrhea. Symptoms beginning after a cup of coffee, especially, are suspect to an allergy or sensitivity for mold or chemicals in the coffee.

Purity Coffee – The Purist Coffee

Most (if not all) coffee companies do not have a standard for acrylamide and other toxins, to keep levels in check. One company that does have a

strict standard for acrylamide, molds, and other harmful chemicals is Purity Coffee.

Purity Coffee is an organic premium coffee. Purity intentionally grows, farms, transports, and roasts their coffee to maximize healthy antioxidants and minimize harmful chemicals, such as pesticides, micro-toxins, acrylamides and polycyclic aromatic hydrocarbons (PAHs). To create the healthiest brewed coffee, they test the coffee at every step with strict standards. Purity uses a proprietary roasting method that roasts the beans just enough to reduce harmful chemicals, like acrylamide, to the lowest levels and prevents over roasting, which risks the development of harmful polycyclic aromatic hydrocarbons (PAHs). This sweet spot, which produces the healthiest beans, is around a medium roast. Light and dark roasts are unhealthy.

In three independent laboratory studies, 49 leading coffee brands were tested. In each one, Purity Coffee ranked superior to all the other brands.[5] On average, Purity Coffee contained over 60% more antioxidants than the other leading organic coffee brands tested, and of all the brands tested for contaminants, *over 60%* tested positive for mold and the toxin, ochratoxin A. Purity contained two times the amount of antioxidants as the other brands and was *free of all contaminants.* How do they accomplish this? Purity Coffee produces coffee for its health benefits. No other coffee company in the world roasts deliberately for health benefits. Purity Coffee is made to be a medicinal-grade product.

Supplements Recommended for Chemical Sensitivity

Two supplements that can aid in reducing chemical sensitivity are Level 1 Therapeutics Essential Fatty Acids and SunSpectrum.

Level 1 Therapeutics Essential Fatty Acids is a patented essential fatty acid blend supplement that is organic, plant based, non-GMO, and sustainable. It contains flax oil, pumpkin oil, sunflower oil, evening primrose oil, and coconut oil. Level 1 Therapeutics Essential Fatty Acids supplement:

- Readily absorbs oxygen and helps transport it to cells;
- Aids all major functions of the body, including physical development, immunity, and brain function;
- Reduces inflammation affiliated with chronic disease; and
- Has been shown to decrease wound-healing time.

Linoleic and alpha linolenic fatty acids, found in Level 1 Therapeutics Essential Fatty Acids, are the building blocks for omega-3 and omega-6 fatty acids. They are considered essential fatty acids, as they must be ingested as food, since the body cannot produce them. They are the "parent" omega-3 and omega-6 oils. You can get essential oils from food, namely fruits and vegetables, nuts and seeds and their oils, and also from supplements.

Fish oil has few critical "parents"; it mainly has "derivatives." Even though fish oils are a popular omega-3 supplement option, studies have shown they do not produce the significant cardiovascular protection that plant-based oils do. Also, current research shows the omega-3s found in fish oils (EPA and DHA) are actually highly unstable molecules that tend to decompose and unleash dangerous free radicals.[6]

SunSpectrum, which contains Sunfiber guar gum, turmeric, CoQ10, and *Bifidobacterium lactis Bl-04,* supports digestive function and repair. It contains all-natural fiber and promotes intestinal and colon health, aids in IBS/IBD, and also supports immune health and healthy aging. SunSpectrum is the only fiber source that meets the requirements for the low FODMAP diet. It is highly bioavailable, a proven prebiotic and probiotic, and promotes cellular energy.

Conclusion

People with chemical sensitivities, which include food allergies and food intolerances, are increasing throughout the world, especially among developed countries. These sensitivities can transform into allergies and ultimately autoimmune disease. One way to reduce chemicals and toxins from your diet is to eat and drink the purest foods you can. The purest coffee you can drink is Purity Coffee. It is the only coffee that is toxin free, grown and roasted to be the healthiest coffee in the world.

References

1. *National Report on Human Exposure to Environmental Chemicals.* Centers for Disease Control and Prevention (online). Available at: https://www.cdc.gov/exposurereport/index.html. Accessed July 12, 2018.
2. Multiple Chemical Sensitivity. Johns Hopkins Medicine (online). Available at: https://www.hopkinsmedicine.org/healthlibrary/conditions/adult/environmental_medicine/multiple_chemical_sensitivity_85,P00480. Accessed July 13, 2018.
3. Stokel K. National Institutes of Health Discovers Protective Effects of Coffee. *Life Extension Magazine.* September 2012
4. García-Moraleja A, et al. Simultaneous determination of mycotoxin in commercial coffee. *Food Control.* November 2015;30(57):282-92.
5. Purity Coffee Lab Results (online). Available at: https://puritycoffee.com/lab-results/. Accessed July 16, 2018.
6. Peskin B. Warning: Fish oil contains no true EFAs— Physicians may be unknowingly prescribing the wrong substance to patients causing great harm—PEOs solve this problem. BrianPeskin.com (online). Available at: https://brianpeskin.com/publications/. Accessed on July 22, 2018.

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Dr. Steven Helschien (a.k.a. Dr. Coffee) is a coffee aficionado and believes that coffee is a powerhouse superfood. He is the founder of Level 1 Diagnostics (a cardiovascular testing program that uses advanced, noninvasive technology to detect and prevent cardiovascular disease), and Level 1 Therapeutics (a health and wellness program dedicated to supporting optimal health). Dr. Helschien is passionate about progressive health issues and encouraging people toward greater health and wellbeing.

Literature Review & Commentary

by Alan R. Gaby, MD
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Iron Deficiency and Fibromyalgia

Eighty-one patients (mean age, 42.5 years) with fibromyalgia, a serum ferritin level below 50 ng/ml (mean, 18.6 ng/ml), and transferrin saturation below 20% (mean, 14.1%) were randomly assigned to receive, in double-blind fashion, intravenous ferric carboxymaltose (a form of iron) or placebo (normal saline), with the same treatment repeated five days later. The dose of each ferric carboxymaltose infusion was 15 mg per kg of body weight, up to a maximum 750 mg. The primary outcome measure was the proportion of patients who had at least a 13-point improvement in the Revised Fibromyalgia Impact Questionnaire (FIQR) score at six weeks after the first infusion. The proportion of patients who achieved the primary endpoint was higher in the iron group than in the placebo group (76.9% vs. 66.7%), but the difference was not statistically significant ($p = 0.31$). With respect to secondary endpoints, significantly greater improvements were seen in the iron group than in the placebo group for mean FIQR total score ($p = 0.015$), Brief Pain Inventory total score ($p = 0.02$), and Fatigue Visual Numeric Scale ($p < 0.001$).

Comment: Adenosine triphosphate (ATP) concentrations have been found to be low at sites of tenderness in patients with fibromyalgia, and it has been hypothesized that ATP deficiency plays a role in the pathogenesis of the disease. Iron is a cofactor for the enzyme, cytochrome oxidase, which plays a role in mitochondrial ATP production through the electron-transport chain. Consequently, iron deficiency might exacerbate symptoms in patients with fibromyalgia. In this study, treatment with iron improved symptoms in fibromyalgia patients who had low or borderline-low iron status. Although iron was given intravenously in this study, oral iron would probably be sufficient in most cases.

Boomershine CS, et al. A blinded, randomized, placebo-controlled study to investigate the efficacy and safety of ferric carboxymaltose in iron-deficient patients with fibromyalgia. *Rheumatol Ther*. 2018 5:271-281.

Vitamin D Deficiency and "Growing Pains"

Among 33 children (mean age, 9 years) in Italy who were experiencing "growing pains," the mean serum 25-hydroxyvitamin D (25[OH]D) level was 15.7 ng/ml. Nineteen children (57.6%) had a 25(OH)D level between 10 and 20 ng/ml, and 8 (24.2%) were below 10 ng/ml. Patients with 25(OH)D levels below 30 ng/ml received vitamin D supplementation for three months. The dosage was 25,000 IU orally once a month for levels between 20 and 30 ng/ml, 100,000 IU orally once a month for levels between 10 and 20 ng/ml, and 100,000 IU intramuscularly once a month for levels below 10 ng/ml. The mean 25(OH)D level increased from 15.7 ng/ml at baseline to 34.1 ng/ml at three months. Pain severity was assessed on a 10-point scale, with 0 indicating no pain and 10 indicating the worst pain. Mean severity of "growing pains" improved from 7.5 at baseline to 2.7 after three months. At 24 months, apparently with no additional vitamin D supplementation, the mean serum 25(OH)D level was 22.7 ng/ml and mean severity of growing pains was 3.9.

Comment: "Growing pains" is a term used to describe general muscle aches and pains that occur in children, most often in the legs. The term is probably a misnomer, as there is no firm evidence that the growth of bones causes pain. The

pains are believed to be caused by excessive running, jumping, and other activity. Recommended treatments include massage, local heat, and analgesics.

Musculoskeletal pain is one of the manifestations of vitamin D deficiency. In an uncontrolled trial, vitamin D supplementation improved "growing pains" in Turkish children with a low serum 25(OH)D level.[1] The current study from Italy supports the observation that "growing pains" may be caused in part by vitamin D deficiency.

Morandi G, et al. Significant association among growing pains, vitamin D supplementation, and bone mineral status: results from a pilot cohort study. *J Bone Miner Metab*. 2015;33:201-206.

Adverse Effect of "Green Smoothie"

A 65-year-old woman with previously normal renal function developed acute oxalate nephropathy, which progressed to end-stage renal disease. One month previously she had undergone a 10-day juice fast, which included two cups per day of juiced spinach (about 10 times the oxalate content of a typical diet). The woman had two risk factors for hyperoxaluria: gastric bypass surgery (which increases oxalate absorption secondary to fat malabsorption) and prolonged antibiotic therapy three months previously for an abdominal wall abscess (antibiotic therapy can deplete oxalate-degrading bacteria in the intestinal tract).

Comment: Many people drink smoothies as a way of getting fruits, vegetables, yogurt, nuts, and other healthful items into their diet. Smoothies can be good for you, provided that they don't contain too much sugar or other unwanted ingredients. However, drinking smoothies or juices that contain large amounts of spinach or beet greens can result in excessive oxalate consumption, potentially leading to kidney stones or acute renal injury.

The woman in this case report had two known risk factors for hyperoxaluria. However, even in the absence of known risk factors, excessive oxalate consumption can, on rare occasions, have serious adverse effects. In another case report, an 81-year-old man developed acute renal failure, apparently from repeatedly consuming large amounts of juices that contained spinach and beet greens.[2] While advanced kidney disease is a known risk factor for oxalate-induced renal injury, this man had only mild chronic kidney disease, with an estimated glomerular filtration rate of 48 milliliters per minute. These case reports demonstrate that it is important to consider the oxalate content of juices and smoothies, and it is probably a good idea to go easy on the spinach and beet greens.

Makkapati S, et al. "Green smoothie cleanse" causing acute oxalate nephropathy. *Am J Kidney Dis*. 2018;71:281-286.

Selenium Supplements and Mortality

Four hundred ninety-one volunteers (aged 60-74 years) in Denmark were randomly assigned to receive, in double-blind fashion, 100, 200, or 300 µg per day of selenium (as selenium-enriched yeast) or placebo for five years, and were followed up for mortality for an additional 10 years. Selenium nutritional status in Denmark is considered to be moderately low, with usual dietary intake around 50 µg per day. In intent-to-treat analysis, compared with placebo, the highest selenium dose (300 µg per day) resulted in an approximately 60% increase in mortality, both at the end of the five-year supplementation period and 10 years later. This increase in mortality, though of similar magnitude at both time points, was not statistically significant after five years, but was significant after 15 years. In contrast, the 100 and 200 µg per day doses resulted in non-significant decreases in mortality, compared with placebo, during the five-year supplementation period, with no clear effect 10 years after selenium was discontinued.

Comment: Selenium is among the most toxic of the essential minerals. Estimates of dietary selenium intake in the United States and Canada have ranged from 60 to 224 µg per day. Adverse effects of excessive selenium intake include hair loss, brittleness or loss of the nails, white spots on the nails, dermatitis, lassitude, depression, and various neurological abnormalities. Toxicity has been observed in people consuming 3,200 µg per day or more. Whether long-term use of doses closer to the amount found in the diet would have adverse effects has not been well studied.

The Food and Nutrition Board of the Institute of Medicine has set the Tolerable Upper Intake Level for selenium at 400 µg per day. The Tolerable Upper Intake Level is defined as "the highest average daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population." However, based on the findings of the new study, it would appear unwise to recommend long-term supplementation with more than 200 µg per day unless there is a clear medical reason to do so. In regions such as South Dakota, where the soil is high in selenium and dietary selenium intake is around 150-300 µg per day, selenium supplementation should probably be avoided or used only in the low doses that might be found in a multivitamin-multimineral product.

Rayman MP, et al. Effect of long-term selenium supplementation on mortality: Results from a multiple-dose, randomised controlled trial. *Free Radic Biol Med*. 2018 Feb 14 [Epub ahead of print].

Another Advantage of Breast Milk

Infant rhesus macaques were either breastfed, fed a formula containing a low amount of lutein, or fed a formula supplemented with lutein to approximate the concentration in breast milk. At six months of age, compared with each formula-fed group, the breastfed group had markedly higher concentrations of lutein in serum, brain, retina, and liver. For example, the mean lutein concentration in the brain and macular portion of the retina was more than three times

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higher in animals fed breast milk than in those fed lutein-supplemented formula. Lutein concentrations were higher in most tissues in animals fed the supplemented formula than in those fed the unsupplemented formula. In all three groups, lutein was differentially distributed across brain areas, with the highest concentrations in the occipital cortex (which is involved in visual processing).

Comment: In this study in rhesus macaques, supplementation of infant formula with lutein significantly increased serum and tissue lutein concentrations compared with unsupplemented formula. However, lutein concentrations were still well below those of animals fed breast milk. With all three diets, occipital cortex had higher lutein concentrations than other brain regions, suggesting that lutein plays a role in visual processing early in life. This study demonstrates that breast milk contains a mechanism to enhance the delivery of lutein to the tissues and organs, which may be important for the development of the visual system. This effect, which cannot be duplicated by adding lutein to infant formula, represents another apparent advantage of breastfeeding over formula feeding.

Jeon S, et al. Lutein Is differentially deposited across brain regions following formula or breast feeding of infant rhesus macaques. *J Nutr*. 2018;148:31-39.

Probiotic for Dandruff

Sixty healthy male volunteers (aged 18-60 years) with moderate-to-severe dandruff were randomly assigned to receive, in double-blind fashion, *Lactobacillus paracasei* NCC 2461 ST11 (10^9 colony-forming units once a day) or placebo for eight weeks. The mean improvement in the free-dandruff score (70% vs. 23%; $p = 0.0005$), the adherent-dandruff score (72% vs. 34%; $p = 0.0005$), and in erythema (58% vs. 31%; $p < 0.05$) was significantly greater in the probiotic group than in the placebo group.

Comment: Dandruff is a persistent inflammatory condition of the scalp. Contributing factors include an imbalance in the proportion of the bacterial and fungal populations colonizing the scalp, skin barrier dysfunction, and excessive seborrhea. Probiotics have the potential to improve dandruff by altering the microbial environment of the scalp. In the present study, oral administration of a specific probiotic (*Lactobacillus paracasei* NCC 2461 ST11) was beneficial in the treatment of dandruff.

Two of the authors of the study were employees of Nestlé (which supplied the probiotic), and three other authors were employees of L'Oreal (of which Nestlé is part owner). While conflicts of interest do not necessarily invalidate the results of research, it is hoped that an independent research group will try to replicate this study.

Reygagne P, et al. The positive benefit of Lactobacillus paracasei NCC2461 ST11 in healthy volunteers with moderate to severe dandruff. *Benef Microbes*. 2017;8:671-680.

Probiotic Prevents Dental Caries

Two hundred sixty-one children (aged 2-3 years) attending a nursery school in Chile were randomly assigned to receive, in double-blind fashion, 150 ml of milk supplemented with *Lactobacillus rhamnosus* SP1 (10^7 colony-forming units per ml) or regular milk (control group) on weekdays for 10 months. The mean number of new dental caries was significantly lower by 35% in the probiotic group than in the control group (1.13 vs. 1.75; $p < 0.05$).

Comment: In previous studies, *L. rhamnosus* GG and *L. reuteri* DSM 17938 each reduced the incidence of dental caries in children.[3,4] The new study adds *L. rhamnosus* SP1 to the list of effective anti-caries probiotic strains. Probiotics may work in part by competing with cariogenic bacteria in the mouth, such as *Streptococcus mutans*.

Rodríguez G, et al. Probiotic compared with standard milk for high-caries children: a cluster randomized trial. *J Dent Res*. 2016;95:402-407.

Vitamin D for Dry Eye Syndrome

One hundred five South Korean patients (mean age, 58.2 years) with dry eye syndrome and vitamin D deficiency or insufficiency (mean serum 25-hydroxyvitamin D level, 10.5 ng/ml) received 200,000 IU of vitamin D3 intramuscularly. Patients with Sjogren's syndrome or other autoimmune diseases were excluded. Significant improvements were seen in the tear break-up time and tear secretion test after two and six weeks, and in eyelid margin hyperemia and severity of symptoms after two, six, and 10 weeks.

Comment: Some studies have found that dry eye syndrome (also called sicca syndrome or keratoconjunctivitis sicca) is associated with low serum 25-hydroxyvitamin D (25[OH] D) levels, although other studies were unable to confirm that finding. Serum 25(OH)D levels decline in response to inflammation, and in people with chronic inflammatory conditions such as dry eye syndrome, a low serum 25(OH) D level may not necessarily indicate vitamin D deficiency. In addition, dry eye syndrome has not been previously mentioned as a symptom of vitamin D deficiency. This study provides preliminary evidence that vitamin D supplementation improves dry eye syndrome in people with low serum 25(OH)D levels; however, the results need to be confirmed by a placebo-controlled trial.

Bae SH, et al. Vitamin D supplementation for patients with dry eye syndrome refractory to conventional treatment. *Sci Rep*. 2016;6:33083.

References

1. Vehapoglu A, et al. Are growing pains related to vitamin D deficiency? Efficacy of vitamin D therapy for resolution of symptoms. *Med Princ Pract*. 2015;24:332-338
2. Getting JE, et al. Oxalate nephropathy due to 'juicing': case report and review. *Am J Med*. 2013;126:768-772.
3. Nase L, et al. Effect of long-term consumption of a probiotic bacterium, Lactobacillus rhamnosus GG, in milk on dental caries and caries risk in children. *Caries Res*. 2001;35:412-420.
4. Stensson M, et al. Oral administration of Lactobacillus reuteri during the first year of life reduces caries prevalence in the primary dentition at 9 years of age. *Caries Res*. 2014;48:111-117.

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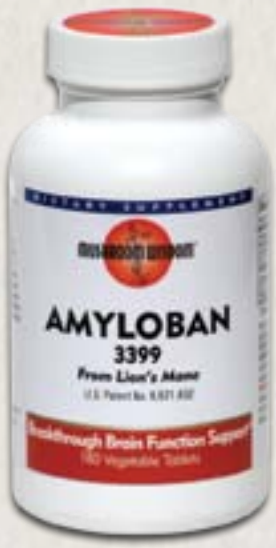

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20 Years of Psychosomatic Energetics A Retrospective

by Dr. Reimar Banis

In 1997, Psychosomatic Energetics (abbreviated PSE) was first publicly presented at the Medical Week in Baden-Baden. It was developed by me, a general practitioner working with empirical medicine techniques, as an extension of H.W. Schimmel's *Vegatest*, a complementary-medicine procedure which he developed. The method is now being used by about 700 specially trained therapists in more than 20 countries around the world.[1] Most of the PSE therapists are naturopathically-oriented physicians and naturopaths taking care of chronically ill patients in their clinical practice.

I should point out that PSE is not a rival to academically-oriented "mainstream medicine," but rather a complement thereto. We know empirically that mainstream medicine necessarily has its limits, which can be seen in the great number of cases of chronic ailments that are difficult or even impossible for it to treat. Moreover, we in general medicine note that many patients don't have any discernible organic disease, but rather are psychosomatically ill – a difficult area of endeavor, and one where mainstream medicine inevitably comes up against its limits.

For instance, for people who are always tired and don't feel well, mainstream physicians empirically are often unable to find any objectifiable cause, whereas with PSE we are able to detect an energy block due to a repressed emotional conflict, after the dissolution of which the patient once again feels well and full of energy. Or, when it comes to this kind of "burnout" patient, PSE finds a bed site that has been energetically disrupted by electrosmog and geo-radiation; after this situation is cleaned up, the chronically tired patient once again experiences relaxing and restful sleep and, after a few weeks, feels hale and hearty again. The same applies with some variation to chronic ailments, where we can often favorably influence the course of the illness or even bring about complete remission, i.e. in the case of chronic polyarthritis[2] or ulcerous colitis.[3]

Figure 1: Dr. R. Voll

Figure 2: Dr. Schimmel

History and Development of the Method

After World War II, Dr. Voll, an internist from Ploching, developed electroacupuncture (Figure 1). In keeping with the spirit of the times, the main focus of the procedure – much as with Dr. Reckeweg, the inventor of homotoxicology – was on energetic dissonances in the form of metabolic toxins that needed to be treated with eliminatory medications and nosodes. At that time, the top expert in nosodes, Dr. Helmut Schimmel (Figure 2), with whom I worked closely for years, was treating energetic dissonances with mixtures of homeopathic meridian complexes (Kern Pharma) that are associated with the seven energy centers of yoga (chakras).

The effects of this novel procedure were impressive, but anything new can also cause confusion – after a while, namely, the chakra disorders would reappear, and then most of the nosodes in the remedy test no longer responded. The patient was detoxified, but still sick. The harmonization of the chakras had evidently extinguished the nosode signals, but an unknown factor related to the energy centers had led to their reactivation and thereby the patients' renewed symptoms. In time, intensive research revealed that emotional conflicts had to be considered the underlying cause of the recurring chakra disruptions.

Experience tells us that most energy blocks are emotional in nature, and it is the understanding of PSE that they arise due to long-ago emotional traumas. These shock-inducing emotional injuries are stored up in energy blocks. This is akin to an organism dealing with a viral infection by means of a measles skin rash, thereby banishing the foreign bodies to the periphery of the organism. The energy blocks lie there for a very long time, at some point becoming passive and energetically relatively well compensated. Mentally, they wind up in what is known as the unconscious.

The conflicts resonate with nosodes to some degree, but unfortunately not completely; so I had to develop new compound remedies to fill these gaps. In time, 28 emotional conflict themes were found, which can be related to various different energy centers, or chakras (Figure 3). It's amazing how often everyday expressions can be so apt in this context, when for instance fear

makes it hard to breathe (Emvita 16 "Panic") or rage feels like a fire in the belly (Emvita 9 "Rage").

Once the currently active conflict has been identified, i.e. when test ampoules with the respective compound agent respond kinesiologically, the patient then receives the corresponding compound remedy for a longish period of time. Through resonance phenomena, the conflict is eventually eliminated completely; this process can be monitored during treatment, if necessary, using a special testing procedure. Once the conflict is eliminated, the energy, which had been bound up in it, is again available to the patient, who will then feel much more energetic. At the same time, emotional self-healing processes leading to greater autonomy are set in motion.

Psychosomatic Energetics came into being when we had effective treatment of unconscious conflicts. As was to be expected given the background of events, most nosodes thereby became therapeutically unnecessary, since the patient is also for the most part detoxified by the process of dissolution of the emotional conflicts.

Initial Practical Experience with PSE and Specification of Coherent Rules

My initial experience with PSE in my clinical practice was unexpectedly unsatisfactory. Normally, medications that test out well, which like the PSE emotional and chakra remedies completely compensate virtually all energy levels, turn out to be very effective when used. However, there were patients who came in for follow-up tests six months later who unexpectedly showed no major improvement and often even tested out with a new conflict.

Only later did it become clear what the reason was for the disappointing therapeutic effects in the trial phase, as well as why new conflicts were constantly surfacing. I had committed several beginner's mistakes in the use of PSE:

- It takes three to four months or more to completely eliminate most conflicts, which means that I had not assigned nearly enough treatment time.
- If one treats conflicts only, which I had unwittingly done, then a checkup test will often turn up a new conflict. This then increasingly confuses the psychoenergetic system, since a multiplicity of active conflicts undergoing treatment at once will continue to have a psychoenergetically disruptive effect in the background, gaining strength in the process.

Once I had corrected these mistakes, it turned out that, after treating hundreds of patients, most of them had not just one, but rather several conflicts needing to be treated in order to achieve significant improvement or healing, and thus calling

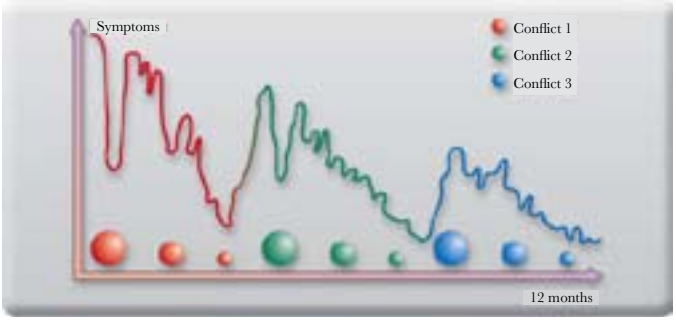

Figure 4: Normal course of PSE healing process

Figure 3: Conflict themes and their associated energy centers

for 12-16 months of treatment (Figure 4). During this treatment time, each and every conflict had to be completely eliminated, i.e. in most cases, it was by no means enough to energetically heal just a single conflict in order for the patient to feel markedly and enduringly better.

Added to which, optimum PSE therapy requires consistent dosage compliance on the part of the patient (12 drops twice daily), since if less is taken, it takes correspondingly longer to heal the conflict; if more is taken, the benefit is virtually nil. Additional or alternative effective forms of conflict healing besides PSE have thus far not been found, aside from the fact that, while just waiting and seeing what happens, conflicts can go passive – but this simply means that they nevertheless continue to represent a source of potential risk. Moreover, they constantly and subliminally siphon off life energy and negatively manipulate any relatively objective assessment of a situation, thereby indirectly sabotaging a person's actions and reactions.

The firm and fast rules of PSE call for a great deal of discipline on the part of the therapist, who must follow a pre-set test sequence as well as adhere precisely to a detailed therapeutic plan. PSE medications cannot be resonated and need to be kept away from electrosmog and other disturbance sources such as heat etc. Detailed information can be found on the website of the IGPSE (International Society for Psychosomatic Energetics), a recognized nonprofit professional association headquartered in Switzerland. This information can also be found in the official PSE user's manual.[1]

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20 Years' Experience with Various Clinical Pictures

We can now look back at 20 years of experience with PSE in various different areas and for all age groups. A four-year clinical study from 2005-2009 involving 11 participating practices and 1002 patients summarizes the treatment results of many therapists using Psychosomatic Energetics. The average therapy time was 4 visits over 15 months. Superb, Good and Satisfactory therapy results were achieved in 86.5% of cases. The fact that PSE practices predominantly treat problem patients makes the therapeutic success rate all the more impressive. Particularly good results were seen for children and teenagers, as well as for patients with strongly psychosomatic clinical pictures.[4]

Basically, any energetic therapy is more effective the earlier you start with it, as long-term studies undertaken by the general practitioner Dr. Holschuh have shown.[5] The therapeutic success rate is more than 90% for children and sinks to less than 70% for 70-year-olds (Figure 5). This is in line with the experience in naturopathic therapy that regenerative ability is age-dependent.

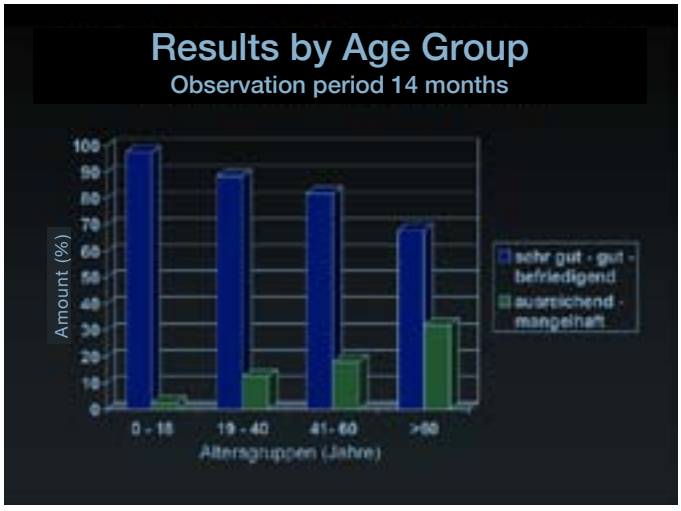

Figure 5: PSE therapeutic success declines with increasing age (Study: "Long-Term Results with PSE" by Dr. B. Holschuh-Lorang, lecture at the Expert's Meeting May 2009 in Konstanz)

This means, specifically, that one should begin therapy as early as possible, as also confirmed by studies by the Viennese general practitioner Dr. Richter with children with behavioral disorders at a children's home.[6] At another children's home, the internist Dr. Hemsing independently confirmed this under similar circumstances.[7] Even children with serious behavioral disorders clearly responded to PSE and, after only a few weeks, exhibited striking improvements in their social behavior.

Figure 6: Gerlinde Paukert

Yet another clinical study (The "Butterfly" Project) was initiated by the retired school principal and kinesiologist Gerlinde Paukert (Figure 6). She looked into whether preventive treatment with PSE might favorably influence the students' scholastic performance and overall behavior. Ms. Paukert writes:

> The energy situation improved for all children and teens, rising by 7% to 25%. the effects were discernible physically as well as mentally and emotionally. Concentration, health and even mood were markedly elevated, the classroom atmosphere improved, and class interaction meant a greater feeling of well-being in the school.[8]

Among adults, the therapeutic spectrum of PSE extends over all areas of specialization from general medicine to gynecology, rheumatology, all the way up to psychiatry and psychosomatics. It is worth noting that the self-healing ability of the organism – once the energetic obstacles to therapy have been cleared away by PSE – never fails to astound. This even applies to clinical pictures usually construed as purely somatic, such as *Ulcera cruris* in cases of venous insufficiency, or *Claudicatio intermittens* with a walking range of just a few yards in cases of nicotine abuse, where we have seen impressive successes with PSE.[1]

The domains of PSE are psychosomatic clinical pictures such as irritable bowel syndrome, where, in many cases, the intestinal flora ignored by mainstream medicine must be treated as well. This also includes chronic pain such as with soft-tissue rheumatism in which, according to the rheumatologist Dr. Scharm, PSE has a high success rate. His summary:

> …in cases of soft-tissue rheumatism (fibromyalgia), my many years of clinical practice experience have shown me that the complementary-medicine method PSE can be a great help. Most cases lead to clearly noticeable improvement of the clinical picture, after which quality of life can be enduringly improved, continuing even after conclusion of PSE therapy. Very often, PSE testing reveals a pattern in the form of a disturbed 6th energy center (hypothalamus, ANS) with the conflict "Uneasiness", both of which agree with the symptomatology of fibromyalgia.[9]

One issue that particularly stands out, according to all experienced fellow physicians, is that the achieved therapeutic successes usually endure, as multiyear follow-up observations made by Dr. Holschuh on her patients have shown. A practice study by Dr. Birgitt Holschuh-Lorang (Figure 7) comprised 153 patients who, between 2001 and 2009, were treated for at least three years with PSE in a general-medicine practice. The question: was the symptomatology truly and lastingly eliminated? 72% of the cases could be assessed as Excellent or Good, 12% as Satisfactory. Only 16% of cases were assessed as Adequate or Deficient. The emotional equilibrium of most of the patients was significantly improved. There is moreover an emotional post-treatment maturation process that can lead to greater emotional autonomy, as the Berlin general practitioner Dr. Müller noted time and again among his patients.[10]

Figure 7: Dr. B. Holschuh-Lorang

It should also be emphasized that PSE correctly reflects people's psychoenergetic state of well-being. This can be seen in

the fact that, in surveys, about a third of a non-selected population group consider themselves to be ill, tired etc., as opposed to two-thirds with good overall well-being. This agrees precisely with the results of PSE, whereas many rival naturopathic methods either designate too many people as sick and disturbed or, on the other hand, conventional-medicine procedures identify too many people with unambiguous feelings of ill health as seemingly healthy. PSE, on the other hand, is in line with the reality of such surveys – a very important criterion of quality in everyday clinical practice.

PSE Therapy with Animals

As a nonverbal form of psychotherapy, PSE is particularly well suited for the treatment of animals. For pets with behavioral disorders, the psychoenergetic disturbances of the owner are often amplified, such that it seems advisable in many cases to treat the animal and its master together. Animals respond quickly and noticeably to the method, and our experience so far shows that conflicts, once eliminated, go away for good. I have been told by some veterinarians that they have had excellent results particularly when it comes to animals in competitive sports.

PSE and Character Type

There is an especially large conflict which PSE designates as the Central Conflict, because it has a central significance for the patient's metabolic system, and for character as well. The chakra associated with the Central Conflict is thus decisive for the patient's temperament:

- Sanguinic (hysteric) = Chakras 2 and 6
- Phlegmatic (obsessive-compulsive) = Chakra 5
- Choleric (depressive) = Chakra 3
- Melancholic (schizoid) = Chakras 1 and 7

Type determination gives the therapist a valuable aid for depth-psychology counseling, because many unconscious personality character traits can be derived from PSE testing results that would otherwise only come after getting to know a person very well. Thanks to knowing patients' temperaments, they can be given type-appropriate life counseling. Every character type has certain "vices" to avoid and "virtues" to foster. Emotional maturation works best through dissolution of the Central Conflict, although of course the patient must also make an active contribution if there is to be any emotional progress.

The four character types have proven to be extraordinarily helpful counseling tools in daily practice, whether it be in order to come to terms with one's darker side or to analyze one's

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relationship with others. This concept has also proven itself in job, couples, and child-rearing counseling. In addition, there are various indications that the origin of the Central Conflict can be traced back to earlier incarnations (more on this in my book *New Life through Energy Healing*). Via this thesis, Psychosomatic Energetics gains a much greater depth that reaches far into depth-psychology and transpersonal psychology. With some justification, one can even talk in terms of spiritual counseling, made possible because of it.

Summary

PSE has been a proven procedure in complementary medicine for 20 years now; it has proven itself as a standard procedure for harmonizing and elevating life energy. Life energy, also called *Prana*, *Ch'i*, ether etc., seems to be not only of a spiritual but also, and above all, an energetic nature. These concepts need to be kept clearly separated, since someone who feels overall unwell often benefits less from a dialogue than from an energy treatment. After all, someone who has a lot of energy feels powerful, resilient, and in a good mood. On the other hand, ailing and mentally overburdened people are usually found to have too little energy. Energy acts, in turn, as a pacemaker for every body cell, but it is also emotionally stimulating, i.e. besides the mental, it also has an important physical effect – an interesting interplay, which has so far seen little scientific research but which seems to be crucially important to our quality of life.

Emotional conflicts, much like invisible computer viruses, seem to disrupt the subtle interplay between energy and body/soul. If the unconscious conflicts are eliminated by means of similar (homeopathic) vibrational patterns over a period of months, life energy can once again flow freely, leading to activation of mental/physical self-healing processes. For all current general medicine clinical pictures, impressive and enduring improvements of well-being and, amazingly, often complete healing have been observed.

References

1. Banis, R. *Lehrbuch Psychosomatische Energetik* [Psychosomatic Energetics Manual], Haug-Verlag Stuttgart 2014
2. Scharm, M. Haben Polyarthritiker häufig eine bestimmte Persönlichkeit? [Do Rheumatoid Arthritis Patients Often Have a Particular Personality Type?]. In: Banis R, *Lesebuch der Psychosomatischen Energetik* Band 5 [Psychosomatic Energetics Reader, Vol. 5], Books on demand Verlag 2015
3. Scharm, M: Erfolgreiche Behandlung chronisch entzündlicher Darmerkrankungen mit der PSE [Successful Treatment of Chronic Inflammatory Intestinal Diseases with PSE], Lecture at Medical Week Baden-Baden 2016
4. Banis R. Multizentrische Praxisstudie zur Psychosomatischen Energetik. *Schweiz. Zeitschrift für Ganzheitsmedizin* [Swiss Journal of Holistic Medicine]. 2010;5:269-272.
5. Holschuh, B. Wie stabil sind Heilerfolge? Langzeitstudienergebnisse unter Anwendung der Psychosomatischen Energetik [How Stable are Healing Results? Long-term Study Results from Application of Psychosomatic Energetics], Lecture at Expert's Meeting May 2009 in Constance
6. Richter, H. PSE Therapie im Kinderdorf Pöttsching [PSE Therapy in the Pöttsching Children's Village]. In: Banis, R, *Lesebuch der Psychosomatischen Energetik* Band 5 [Psychosomatic Energetics Reader, Vol. 5], Books on demand Verlag 2015
7. Hemsing, W. Adjuvante Homöopathie mit Tropfen bei verhaltensgestörten Jugendlichen" [Adjuvant Homeopathy with Drops for Teenage Behavioral Disorders], In: Banis R, *Lesebuch der Psychosomatischen Energetik* Band 3 [Psychosomatic Energetics Reader, Vol. 3], Comed Verlag Hochheim 2007
8. Paukert G. Projekt Schmetterling - Förderung von Schulkindern. In: Banis R, *Lesebuch der Psychosomatischen Energetik*, Band 3. Sulzbach, Co'med, 2006.
9. Scharm, M. Weichteilrheuma naturheilkundlich behandeln [Naturopathic Treatment of Soft-tissue Rheumatitis]. Schweiz Z Ganzheitsmed [Swiss Journal of Holistic Medicine] 2016;28:89-91
10. Müller, A. Persönlichkeitsentwicklung mithilfe der Psychosomatischen Energetik [Personality Development with the Aid of Psychosomatic Energetics]. Schweiz Z Ganzheitsmed [Swiss Journal of Holistic Medicine] 2016;28:267-270

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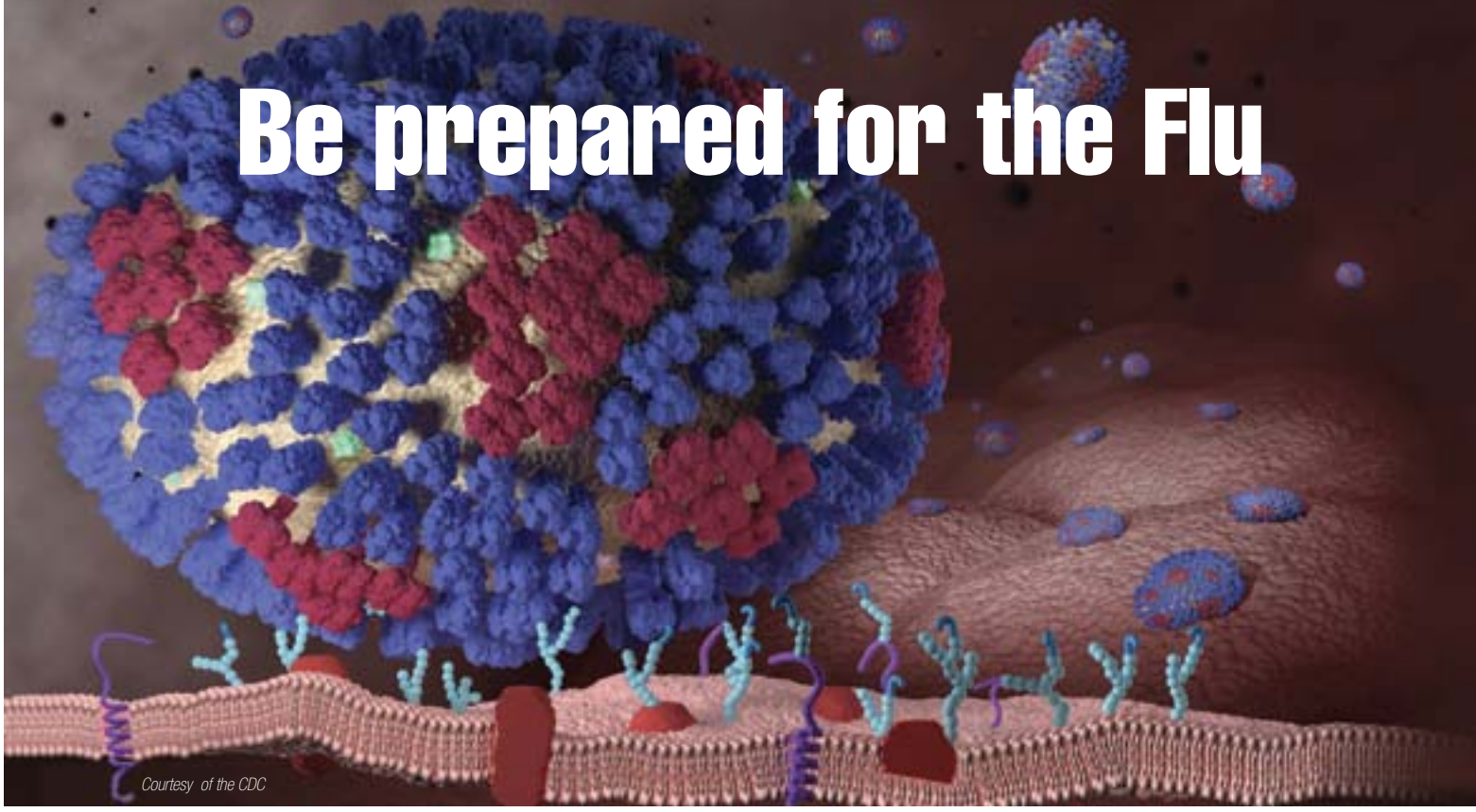

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In addition to antibodies, bovine colostrum contains proline-rich polypeptides (PRPs) and lactoferrin. In general, the PRPs regulate the immune system, but when there is an infection threat by a viral pathogen, the PRPs stimulate the immune system to isolate and destroy the virus. Lactoferrin's direct mechanisms of action in killing pathogens include binding to target cells, and thus preventing the pathogens from binding; binding to the pathogens and causing them to lyse; or inhibiting viral replication once the virus has entered the target cell. Lactoferrin administration enhances NK cell activity as well as Th1 cytokine response which results in general protection against viruses that cause influenza and the common cold.[ii],[iii] More specifically, bovine lactoferrin's anti-influenza activity has been observed against influenza A virus H1N1 and H3N2.[iv],[v],[vi]

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[i]Cesarone MR, Belcaro G, Di Renzo A, Dugall M, Cacchio M, Ruffini I, Pellegrini L, Del Boccio G, Fano F, Ledda A, Bottari A, Ricci A, Stuard S, Vinciguerra G. Prevention of influenza episodes with colostrum compared with vaccination in healthy and high-risk cardiovascular subjects: the epidemiologic study in San Valentino. *Clinical and Applied Thrombosis/Hemostasis.* 2007 Apr;13(2):130-136.

[ii] Yamauchi K, Wakabayashi H, Shin K, Takase M. Bovine lactoferrin: benefits and mechanism of action against infections. *Biochem Cell Biol.* 2006 Jun;84(3):291-6. Review.

[iii] Wakabayashi H, Oda H, Yamauchi K, Abe F. Lactoferrin for prevention of common viral infections. *J Infect Chemother.* 2014 Nov;20(11):666-71.

[iv] Pietrantoni A, Dofrelli E, Tinari A, Ammendolia MG, Puzelli S, Fabiani C, Donatelli I, Superti F. Bovine lactoferrin inhibits influenza A virus induced programmed cell death in vitro. *Biometals.* 2010 Jun;23(3):465-75.

[v] Ammendolia MG, Agamennone M, Pietrantoni A, Lannutti F, Siciliano RA, De Giulio B, Amici C, Superti F. Bovine lactoferrin-derived peptides as novel broad-spectrum inhibitors of influenza virus. *Pathog Glob Health.* 2012 Mar;106(1):12-9.

[vi] Scala MC, Sala M, Pietrantoni A, Spensiero A, Di Micco S, Agamennone M, Bertamino A, Novellino E, Bifulco G, Gomez-Monterrey IM, Superti F, Campiglia P. Lactoferrin-derived peptides active towards influenza: identification of three potent tetrapeptide inhibitors. *Sci Rep.* 2017 Sep 6;7(1):10593.

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Cellular and Mitochondrial Support in the Fatigued Patient

by Paul S. Anderson, NMD

Based on the author's clinical experience with patients in fatiguing states and the available science, the following paper outlines an approach supporting cellular and mitochondrial function in patients with fatigue. The goal is to present both an evidence- and practice-based format for restoring cellular health.

It should be noted that many whole person therapies crucial to the treatment of fatigue, while not discussed in this review, are assumed to be known and practiced concurrently. These include but are not limited to endocrine support, immune and infectious therapies, sleep hygiene and therapies, digestive support and diet therapy as well as many others.

Basis of the Disorders

Much has been published regarding the potential causes of fatigue. Most clinicians agree these causes to be multifactorial and patient specific. Potential partial causes or aggravations of fatigue states include hippocampal dysfunction,[1] neurotransmitter imbalance and autoimmunity,[2,3] lifestyle and physical activity deficits,[4] oxidative stress and mitochondrial dysfunction,[5-14] methyl cycle defects,[15] seasonal affective disorder,[16] anemia,[17] and many others.

In this review I will focus on cell health and the recovery of the internal and external cellular balance and function in service of fatigue recovery. This has been clinically the most efficacious therapy approach (when the above multifactorial issues have been assessed) regardless of the cause of the fatigue. I will focus on the support of oxidation-reduction (ReDox) reactions and mitochondrial health. I always attempt to work with ReDox first and then mitochondrial health; with improved mitochondrial health, the cell can start to operate faster, dump toxins and put stress on the ReDox system overall. I have seen this be a potential cause for poor reactions to mitochondrial therapies (even when it appears that mitochondrial therapies are most needed). In a fragile patient I may work on ReDox for one to four weeks before mitochondrial therapies. In more robust/higher vitality patients, I will address these two areas concurrently but still may start slower on the mitochondrial aspects of therapy.

ReDox Balance and Support Naturally Occurring in the Human

The overall ReDox state is governed by the interplay between fat-soluble (cell and mitochondrial membranes, lipid molecules such as cholesterol etc.) and water-soluble (plasma, cytosol, mitochondrial) compartments. The base of ReDox balance is tocopherols, balanced omega fats and triglyceride molecules (phosphatidyl choline, serine etc.) for lipid membranes and glutathione and ascorbate activity for the water-soluble compartments. Of note, in support of the idea of ReDox therapies before mitochondrial therapies, overall extracellular and cytosolic ReDox supports mitochondrial ReDox and stability.

Once the lipid membrane substrates (omega fats and triglycerides mentioned above) are in place and balanced, the overall ReDox state can be maintained by ascorbate, glutathione, and the tocopherols. Omega oils, arachadonate (or precursors) and triglycerides (such as phosphatidylcholine) and its relatives should be targeted first in the diet for ReDox system balance. Then supplemental additions can be added, using the variable dose strategy at the end of the article.

Glutathione can be administered parenterally or as an oral liposome as well as supported by lipoic acid, l-glutamine and N-acetyl-cysteine as precursors. Additionally, the cycling and support of glutathione requires specific nutrients, without which glutathione activity decreases. These include magnesium, selenium, zinc, and vitamins B-2, B-3 and B-5.[18-24]

Rationale for Specific Mitochondrial Therapies

Oxidative phosphorylation is the process in which ATP is formed as a result of the transfer of electrons from NADH or FADH 2 to O2 by a series of electron carriers. In the more global nutrient substrate sense, NADH and FADH2 may be formed in glycolysis, fatty acid oxidation, and the citric acid cycle. When these substrates donate electrons to the process, they reduce molecular oxygen to water, a large amount of free energy is liberated, which can be used to generate ATP. This process, which takes place in mitochondria, is the major source of ATP production.[25]

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Consider the use of carnitine first as the fat substrates from food that provide the highest energy (via beta-oxidation) use carnitine transport. Carnitines are involved in mitochondrial transport of fatty acids and are of critical importance for maintaining normal mitochondrial function.[26] Supplementation of an antioxidant, acetyl-L-carnitine, completely or partially restored modulated gene expression levels in mitochondrial complex I, IV and V. It further reduced mitochondrial apoptosis and oxidative damage in an animal model.[27]

Coenzyme Q10 (CoQ10) is an essential electron carrier in the mitochondrial respiratory chain and an important antioxidant.[28] Electrons are carried from NADH-Q oxidoreductase by the reduced form of CoQ (also known as ubiquinone). Ubiquinone also carries electrons from FADH2.[29]

Iron is also necessary. Ortancil et.al include a statement that significantly correlates with the author's clinical experience with fatigue in general as well as fibromyalgia (FMS) "Our study implicates a possible association between FMS and decreased ferritin level, even for ferritin in normal ranges."[17] Most commonly, oral repletion of iron stores via diet and supplement interventions is preferred. In the author's experience, in those with the other mentioned comorbidities and low ferritin of over five years duration, injectable iron may be required. Clinical experience and the study by Ortancil indicate that a ferritin level over 40 (and ideally 50-75) is required to replete the mitochondrial iron reserves as well as hematologic requirements. All primary targets of iron stores (mitochondrial,[25] neurochemical and hematologic) contribute significantly when iron stores are low.

Regarding iron supplementation, if used appropriately, parenteral forms can raise ferritin and iron status faster than any oral repletion can, and clinically are associated with faster positive outcomes in low ferritin patients. Use caution with oral iron repletion in patients with active GI infections and significant dysbiosis.

The amino acid proline is an often overlooked mitochondrial component. It is actually similar to the crucial role CoQ-10 has. Although there are many papers on proline in mitochondria, an animal study by Hancock et.al outlines proline's crucial role:

> Proline dehydrogenase/oxidase (PRODH/POX) is a mitochondrial protein critical to multiple stress pathways. Because of the roles of PRODH/POX in signaling, and its shared localization to the mitochondrial inner membrane with the electron transport chain (ETC)… Our results suggest a potential regulatory loop between PRODH/POX and succinate in regulation of mitochondrial respiration.[30]

Mitochondrial Effectors

The ionic mitochondrial cofactors calcium, magnesium, potassium, zinc, copper and chromium are well known in basic science data. They are of note, as all ionic cofactors are, in that they typically complete a cofactor with a paired inorganic portion (typically a B vitamin).

With the high affinity of mitochondria for many mineral (metal) and chemical substances, it is no surprise that the mitochondria are a trap for many toxic influences as well.

Many heavy metals affect mitochondrial function. Cadmium is actually one of the most potent mitochondrial poisons known. In a human cell model Mao et.al describes the mechanism:

> We found that Cd could directly increase in permeability and decrease in membrane potential of mitochondria, even resulted in mitochondrial swelling, and that Cd could inhibit the activities of ATPase, lactate dehydrogenase (LDH), superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px), enhanced the levels of reactive oxygen species (ROS) and lipid peroxidation (LPO).[31]

Many chemicals can slow or block mitochondrial function via direct or indirect inhibition of oxidative phosphorylation. These include barbituric acid, many phenols, ethanol, and a number of pesticides to name a few.

The Lipoic Acid-Based Thiols

Alpha lipoic acid (ALA) is a thiol and as such is known in basic science to support levels of glutathione in the liver and other tissues. In experimental models,[32,33] ALA has been shown to be helpful in pushing the redox balance in a positive direction via modulation of inflammatory cytokines such as tumor necrosis factor and NF-kappa-b. Other data provide multiple other mechanisms for ALA in mitochondrial function.[34,35]

Lipoic acid mineral complex (LAMC), known as the proprietary formula "Poly MVA" in North America, has shown to be helpful in cell repair, mitochondrial repair and radioprotection.[36-39] Like ALA, LAMC does take time to work so most patients are advised that either therapy (like all others) may need to be continued for a number of months for a positive effect to be noted.

Of specific note in mitochondrial support and repair, a paper by Sudheesh et.al showed mitochondrial support and repair in the most mitochondrial dense tissue, the myocardium:

> The formulation significantly ($p < 0.05$) enhanced the activity of CAT and GPx compared to the aged control. The level of GSH was also significantly improved and the level of lipid peroxidation was decreased significantly ($p < 0.05$) by POLY-MVA. The results indicate that POLY-MVA is effective to protect the age linked decline of myocardial mitochondrial antioxidant status. The findings suggest the use of this formulation against myocardial aging.[40]

Therapeutic Strategies and Examples

Variable dosing strategy. A model using intake and supplement dosing, equivalent to need, includes lower supplemental dosing when in a healthy and preventive state, progressively elevated doses for a time in repletion or disease states, and lower maintenance

continued on page 40 ➤

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- **Superior antioxidant and free radical protection ***
- **Fast acting, easy to use and quick results ***
- **Supports energy production at the mitochondrial level ***
- **Enhances quality of life ***
- **May replace specific nutrients that may be depleted during certain therapies ***

■ Studies evaluated the effects of LAMC and radiation in various animal models. Whole-body gamma radiation exposure once a week for 2 weeks and daily after 4 Gy of irradiation protected DNA damage in the peripheral blood. It also rendered protection against radiation-induced lowering of platelet count and appears to be responsible for its radio sensitizing and protective effects while supporting mitochondrial remodeling.

■ Dr. Paul S. Anderson has worked with LAMC in various clinical settings (neuro-degenerative illnesses, chronic fatigue/fibromyalgia and mitochondrial dysfunction) and has documented the following:

- Poly-MVA shows consistent safety and efficacy in all its uses
- Poly-MVA improved quality of life in the oncology population
- Poly-MVA added to multi-agent therapies for chronically ill patients led to improved outcomes, positive responses and quality of life.

■ Dr. Paul S. Anderson, NMD has shown the clinical synergy between LAMC and DCA; LAMC is neuroprotective and uniquely supportive in mitochondrial upregulation.
■ Ischemia studies demonstrated improvement and protection.
■ Phase One human safety trials in hypertension completed.
■ A 1000-patient oncological animal study resulted in an 86% improved quality of life.

Neuroscientist Dr. Frank Antonawich notes:

■ **This complex enhances the enzymatic activities of multiple Krebs cycle enzymes while upregulating mitochondrial function at complex I-IV.**

■ **With its powerful antioxidant properties, such as scavenging of free radicals, lowering lipid peroxidation, increasing the levels of glutathione, glutathione peroxidase, manganese superoxide dismutase, and catalase, it gives us a powerful complex to combat fatigue associated with numerous mitochondrial abnormalities.**

■ **The complex also modulates mitochondrial dysfunction, acts as a prophylactic for neuronal and radio protection, supports DNA repair, and improves the quality of life.**

"The therapeutic function /potential of this complex can be utilized in the various applications for supporting neurological injury resulting from TBI's, transient ischemic attack, death of neurons and other progressive loss of structure or function of neurons associated with any neurological event." - Dr. Paul S. Anderson, AMSA Clinic

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Cellular and Mitochondrial Support

➤ *continued from page 38*

doses when balance is restored. The pattern the author uses clinically is a "test dose" (to assess the sensitivity of the patient to the agent) followed by an escalating therapeutic dose (used for the duration of the active repair process) followed by either discontinuation of the agent or the use of a maintenance dose to augment diet. In the doses below the range from low to high reflects this three-tiered process. [Agents with an asterisk (*) are used only if clinically indicated, and doses are expressed as total daily intake, which may be in divided doses. As supplements vary in dose, these are approximate total oral doses.] For IV/parenteral therapy doses please see the *Townsend Letter* article I authored November 2014.[41]

ReDox Support

- Omega-3 oils* 500 IU to 3000 IU, dosed with food
- Phosphatidyl choline 500 to 3000 mg, dosed with food
- Mixed tocopherols 200 IU to 400 IU
  - (Or a tocopherol/tocotrienol combination 40 IU-100 mg to 120 IU-300 mg)
- Vitamin C 1000 to 4000 mg
- Liposomal glutathione 200 to 800 mg
  - (Or ALA 300 to 600 mg)

Mitochondrial Support

- Consider metal and chemical toxicity especially in recalcitrant cases
- Curcumin 100 to 1000 mg per day can help both metals and chemicals leave the mitochondria.[42-44]
  - Consider heavy metal testing and treatment.
- Acetyl-l-carnitine 500 to 2500 mg
  - L-Carnitine 2000 to 4000 mg
- NADH Lozenge ([25mg] / CoQ-10 [50mg]) *I use Seeking Health lozenges 1 to 4 daily.
- A B-complex with riboflavin-5-phosphate content of 25 to 150 mg
- A multi-mineral supplement
- Proline (or a multi-amino supplement with this level) 500 to 2000 mg
- PolyMVA 5 mL to 30 mL
- Iron only if indicated as mentioned above. If using an oral product, I prefer one of the "hematinic complexes" available from many supplement companies.

Treatment time can vary greatly due to many factors. These include the comorbidities mentioned at the beginning of this paper, length of illness, status of digestive tract and others. In my experience for most fatigued patients a range of three months to two years may be required depending on these factors.

Paul S. Anderson, NMD, is medical director of Advanced Medical Therapies in Seattle, Washington, a clinic focusing on the care of patients with cancer and chronic diseases. Former positions include professor of pharmacology and clinical medicine at Bastyr University and Chief of IV Services for Bastyr Oncology Research Center. He is a graduate of National College of Natural Medicine (Portland, Oregon) and began instructing classes at naturopathic medical schools in the early 1990s. He is co-author of the Hay House book *Outside the Box Cancer Therapies* with Dr. Mark Stengler as well as a co-author with Jack Canfield in the anthology *Success Breakthroughs*. He is a frequent CME speaker and writer and has extended his educational outreach through his CE website www.ConsultDrAnderson.com.

References

1. Yasser E. et.al. Hippocampus Dysfunction May Explain Symptoms of Fibromyalgia Syndrome. A Study with Single-Voxel Magnetic Resonance Spectroscopy. *J Rheumatol*. 2008;35:1371-1377.
2. Häuser W, et al. Treatment of fibromyalgia syndrome with antidepressants: a meta-analysis. JAMA. 2009; 301(2):198-209.
3. Klein R, Berg PA. High incidence of antibodies to 5-hydroxytryptamine, gangliosides and phospholipids in patients with chronic fatigue and fibromyalgia syndrome and their relatives: evidence for a clinical entity of both disorders. *Eur J Med Res*. 1995 Oct 16;1(1):21-6.
4. Brooks M. Fibromyalgia Symptoms Eased by "Lifestyle Physical Activity" (CME activity) Medscape. Published online March 29, 2010.
5. Nazıroğlu M, et al. Vitamins C and E treatment combined with exercise modulates oxidative stress markers in blood of patients with fibromyalgia: a controlled clinical pilot study. *Stress*. 2010 Nov;13(6):498-505.
6. Ibid.
7. Myhill S, Booth NE, McLaren-Howard J. Chronic fatigue syndrome and mitochondrial dysfunction. *Int J Clin Exp Med*. 2009;2: 1-16.
8. Bell DS. *Cellular Hypoxia and Neuro-Immune Fatigue.* Livermore: WingSpan Press, 2007.
9. Pall ML. Elevated, sustained peroxynitrite levels as the cause of chronic fatigue syndrome. *Med Hypotheses*. 2000; 54: 115-125.
10. Richards RS, et al. Blood parameters indicative of oxidative stress are associated with symptom expression in chronic fatigue syndrome. *Redox Report*. 2000; 5: 35-41.
11. Zeevalk GD, et al. Mitochondrial inhibition and oxidative stress: Reciprocating players in neurodegeneration. *Antioxid Redox Signal*. 2005; 7: 1117-1139.
12. Kennedy G, et al. Oxidative stress levels are raised in chronic fatigue syndrome and are associated with clinical symptoms. *Free Radic Biol Med*. 2005; 39: 584-589.
13. Pall ML. Explaining "Unexplained Illnesses". New York: Harrington Park Press, 2007.
14. Blaylock RL, Maroon J. Natural plant products and extracts that reduce immunoexcitotoxicity-associated neurodegeneration and promote repair within the central nervous system. *Surg Neurol Int*. 2012; 3: 19
15. Anderson PS (2012, August). Active comparator trial of addition of MTHFR specific support versus standard integrative naturopathic therapy for treating patients with diagnosed Fibromyalgia (FMS) and Chronic Fatigue Syndrome (CFS). Poster Presentation, presented at the American Association of Naturopathic Physicians annual convention, Bellevue, WA.
16. Terman M, et al. Chronic fatigue syndrome and seasonal affective disorder: comorbidity, diagnostic overlap, and implications for treatment. *The American Journal of Medicine*. September 28, 1998;105 (3, Supplement 1):115S-124S
17. Ortancil O, et al. Association between serum ferritin level and fibromyalgia syndrome. *Eur J Clin Nutr*. 2010 Mar;64(3):308-12
18. Johnston CS, Meyer CG, Srilakshmi JC. Vitamin C elevates red blood cell glutathione in healthy adults. *Am J Clin Nutr*. 1993 Jul;58(1):103-105.
19. Barbagallo M, et.al. Effects of Glutathione on Red Blood Cell Intracellular Magnesium Relation to Glucose Metabolism. *Hypertension*. 1999;34:76-82.
20. Eroglu A. The Effect of Intravenous Alanyl-Glutamine Supplementation on Plasma Glutathione Levels in Intensive Care Unit Trauma Patients Receiving Enteral Nutrition: The Results of a Randomized Controlled Trial. *Anesth Analg*. 2009;109:502–5.
21. Slyshenkov VS, Dymkowska D, Wojtczak L. Pantothenic acid and pantothenol increase biosynthesis of glutathione by boosting cell energetics. *FEBS Lett*. 2004 Jul 2;569(1-3):169-72.
22. Wojtczak L, Slyshenkov VS. Protection by pantothenic acid against apoptosis and cell damage by oxygen free radicals--the role of glutathione. *BioFactors*. 2003;17 (1-4): 61–73.
23. Mills BJ, et.al. Effect of Zinc Deficiency on Blood Glutathione Levels. *J. Nutr*. 1982; Ill: 1098-1102.
24. Omata Y, et al. Decreased zinc availability affects glutathione metabolism in neuronal cells and in the developing brain. *Toxicol Sci*. 2013 May;133(1):90-100.
25. Berg JM, Tymoczko JL, Stryer L. *Biochemistry*. 5th edition. New York: W H Freeman; 2002. Chapter 18, Oxidative Phosphorylation. Available from: https://www.ncbi.nlm.nih.gov/books/NBK21208/
26. Sharma S, Black SM. Carnitine Homeostasis, Mitochondrial Function, and Cardiovascular Disease. *Drug Discovery Today: Disease Mechanisms*. 2009;6(1-4):e31-e39.
27. Li X, et al. An acetyl-L-carnitine switch on mitochondrial dysfunction and rescue in the metabolomics study on aluminum oxide nanoparticles. *Particle and Fibre Toxicology*. 2016;13:4.
28. Quinzii CM, Hirano M. Coenzyme Q and Mitochondrial Disease. Developmental disabilities research reviews. 2010;16(2):183-188.
29. Berg JM, Tymoczko JL, Stryer L. *Biochemistry*. 5th edition. New York: W H Freeman; 2002. Section 18.3, The Respiratory Chain Consists of Four Complexes: Three Proton Pumps and a Physical Link to the Citric Acid Cycle. Available from: https://www.ncbi.nlm.nih.gov/books/NBK22505/
30. Hancock CN, et al. Co-regulation of mitochondrial respiration by proline dehydrogenase/oxidase and succinate. *Amino Acids*. 2016;48:859-872.
31. Mao WP, et al. Cadmium directly induced mitochondrial dysfunction of human embryonic kidney cells. *Hum Exp Toxicol*. 2011 Aug;30(8):920-9.
32. Maes M, Mihaylova I, Bosmans E. Not in the mind of neurasthenic lazybones but in the cell nucleus: patients with chronic fatigue syndrome have increased production of nuclear factor kappa beta. *Neuro Endocrinol Lett*. 2007 Aug;28(4):456-62.
33. Moore RM et.al. Alpha-Lipoic Acid Inhibits Tumor Necrosis Factor-Induced Remodeling and Weakening of Human Fetal Membranes. *Biol Reprod*. Apr 2009; 80(4): 781–787.
34. Ong SLH, et al. The Effect of Alpha-Lipoic Acid on Mitochondrial Superoxide and Glucocorticoid-Induced Hypertension. *Oxidative Medicine and Cellular Longevity.* 2013. Article ID 517045.
35. Liu J. The effects and mechanisms of mitochondrial nutrient alpha-lipoic acid on improving age-associated mitochondrial and cognitive dysfunction: an overview. *Neurochem Res*. 2008 Jan;33(1):194-203.
36. Menon A, Nair CKK. Poly MVA – a dietary supplement containing alpha-Lipoic Acid Mineral Complex , enhances cellular DNA repair. *Int. J. Low Radiation*. 2011.
37. Ramachandran L, Krishnan CV, Nair CKK. Radioprotection by α-Lipoic Acid Mineral Complex formulation, (POLY-MVA) in mice. *Cancer Biotherapy and Radiopharmaceuticals.* 2010; 25 (4): 395-399.
38. Menon A, Krishnan CV, Nair CKK. Protection from gamma-radiation insult to antioxidant defense and cellular DNA by POLY-MVA, a dietary supplement containing palladium lipoic acid formulation. Int. J. Low Radiation. 2009; 6 (3): 248-262.
39. Menon A, Krishnan CV, Nair CKK. Antioxidant and radioprotective activity of POLY-MVA against radiation induced damages, *Amala Cancer Bulletin.* 2008; 28: 167-173
40. Sudheesh NP, et.al. Effect of POLY-MVA, a palladium a-lipoic acid complex formulation against declined mitochondrial antioxidant status in the myocardium of aged rats. Food and *Chemical Toxicology*. 2010;48:1858–1862.
41. Anderson PS. Update: Injection Therapies for Chronic Fatigue and Fibromyalgia. http://www.townsendletter.com/Nov2014/inject1114.html. 42. Feng J, et al. Curcumin Inhibits Mitochondrial Injury and Apoptosis from the Early Stage in EAE Mice. *Oxidative Medicine and Cellular Longevity*. 2014, Article ID 728751.
43. García WR, Pedraza-Chaverrí J. Protective effect of curcumin against heavy metals-induced liver damage. *Food and Chemical Toxicology*. 2014;69.
44. Wawrzyniak N, et.al. Effect of short-term dietary curcumin supplementation on mitochondrial regulatory proteins in muscle and brown adipose tissue of aged mice. *FASEB Journal.* 1 Apr 2014.

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New Hope for Alzheimer's Disease, Part 2: Understanding Folate, B12, and Homocysteine

by James Greenblatt, MD

A multitude of risk factors have been identified for Alzheimer's disease, and while some, such as increased age and risk-conferring gene variants, are immutable, others can be exogenously modified. The identification and empirical corroboration of such risk factors is cause for hope. In essence, these modifiable factors offer medical practitioners the opportunity to assess Alzheimer's susceptibility along a dynamic continuum, and the ability to proactively alter Alzheimer's risk-conferring variables such that risk is diminished.

Part 1 in this series, "New Hope for Alzheimer's," outlined the benefits of the element lithium in protecting against the neuropathological deterioration in Alzheimer's disease. The present article will focus on protecting against cognitive decline and Alzheimer's via the alteration of two modifiable risk factors: decreasing homocysteine and enhancing B vitamins. Both have been established as independent risk factors for Alzheimer's and can easily be modified through diet and/or supplementation.

Homocysteine

Homocysteine is a non-proteinogenic amino acid that is biosynthesized from methionine. It is normally converted into other amino acids for the body to use through the processes of transsulfuration and methylation, which spurs the activities of the cardiovascular, neurologic, reproductive, and detoxification systems. Methylation of homocysteine allows the body to produce proteins and other compounds that are essential for health.

If homocysteine accumulates in the bloodstream, however, a host of problems follow. Scientists have long known that high homocysteine levels are associated with cardiovascular disease, renal disease, and stroke. Recent studies also show that elevated homocysteine is correlated with adverse neurologic outcomes, including memory decline, poor judgment, Parkinson's disease, and Alzheimer's disease.[1] Clinical trials place the population attributable risk of dementia secondary to homocysteine level elevation at 4.3 – 31%; in other words, an individual's risk of developing dementia may increase by up to a stunning 31% as a result of his or her homocysteine scales tipping even slightly towards 'excess.'[2]

The link between Alzheimer's and homocysteine is not speculative, either; on the contrary, what has been dubbed "the homocysteine hypothesis" is based upon the observation that Alzheimer's patients have significantly elevated serum concentrations of homocysteine. Researchers worldwide have been investigating the Alzheimer's-homocysteine association for decades.

The Homocysteine Hypothesis: Scientific Consensus

Over 20 years ago, researchers had speculated homocysteine was important for neurologic aging. A 1997 study examining intrinsic factors that contribute to the aging process explicitly designated homocysteine as being such a factor.[2] In 2000, researchers Nagy et al conducted a study to explore the homocysteine-Alzheimer's connection and determined that even moderate increases in serum homocysteine levels are associated with an upregulation of the expression of cyclin E, a protein involved in Alzheimer's pathogenesis.[3] The mean concentration of homocysteine in subjects who expressed cyclin E in the brain was 18% higher than in patients who did not express cyclin E.[3]

Studies such as these spurned a surge in research in the early 2000s geared towards elucidating the homocysteine-Alzheimer's link. Of these, one of the most influential was the Framingham Study. Noting that high homocysteine levels are related to cognitive impairment, researchers from Boston University and Tufts University initiated an experiment tangential to the Framingham Heart Study to further investigate this connection.[4,5] The Framingham Heart Study, launched in 1946 in Framingham, Massachusetts, is a large-scale longitudinal cohort study that is currently focused on its third generation of participants. The original study was and is geared towards cardiovascular health; however, its longitudinal design permitted the Tufts and BU researchers a chance to examine homocysteine levels in younger participants over a period of years. Between 1986 and 1990, plasma homocysteine levels were measured in 1,092 participants

determined to be, initially, 'dementia free.' From 1986 through 2000, 111 of participants developed dementia; of these 111 individuals, 83 were ascribed the specific diagnosis of Alzheimer's. Elevated homocysteine levels DOUBLED the chance that a participant would develop Alzheimer's disease, and each increment of homocysteine elevation increased Alzheimer's risk by an incredible 40%.[5] Even more astounding, the homocysteine-Alzheimer's correlation was found to be independent of age, gender, phenotype, or other risk factors.

More recent research has corroborated such findings. From examining the medical records of 4227 men aged 70-89 years, a team of Australian scientists concluded that the risk of Alzheimer's increased by 48% when homocysteine concentrations are doubled.[6] Moreover, an association was revealed between high homocysteine and lower scores on tests of immediate memory, delayed memory, and global cognitive performance.

Studies focusing on Alzheimer's pathology in women have yielded comparable results, demonstrating that homocysteine is a universal Alzheimer's risk factor. In 2009 a research team from Sweden used data from the Prospective Population Study of Women in Gothenburg[7,8] to extract data relevant to homocysteine and late-life Alzheimer's status. Thanks to the large-scale nature of the Gothenburg Study, baseline homocysteine levels were available for over 1,000 female participants, and the 2009 team was able to follow the trajectory of the participants' cognitive health for 35 years. Middle-aged women whose baseline homocysteine levels were high experienced a substantially greater Alzheimer's risk later in life.[7]

It should be noted that the biologic mechanisms underlying the homocysteine-Alzheimer's correlation have yet to be fully elucidated. Some researchers maintain that high homocysteine increases oxidative stress, thereby leading to excitotoxicity. Another theory suggests that high homocysteine levels contribute to beta-amyloid and tau protein deposition, accelerating the formation of plaques and tangles. Scientists from the 2009 Gothenburg study speculate that homocysteine is directly related to a host of processes involved in Alzheimer's pathogenesis, such as the stimulation of beta-amyloid production, cholinesterase decrease, glutamate receptor activation, tau phosphorylation, and oxidative stress.[7]

More research is needed to pinpoint the precise mechanism underlying the homocysteine-Alzheimer's correlation, and establish whether homocysteine is the common denominator in Alzheimer's degenerative processes or simply a marker for these processes. Regardless of whether high homocysteine is causal or merely indicative, the validity and significance of its correlation with Alzheimer's disease cannot be over-emphasized. In fact, a paper was published earlier this year by an international consortium of experts aiming to alert the medical and lay communities that the 'homocysteine hypothesis' is a hypothesis no longer.[9] Having reviewed literature from the last 20 years, these experts from medical schools around the world came together to announce that the relationship between homocysteine and Alzhiemer's can no longer be ignored: "We…conclude that elevated plasma total homocysteine is a modifiable risk factor for the development of cognitive decline, dementia, and Alzheimer's disease in older persons."[9] This acknowledgement, along with the vast body of research proving the Alzheimer's-homocysteine correlation, is tremendously encouraging: a definitive link between an amino acid in the blood and the process of neuronal atrophy points to a definitive protocol for early intervention and likely a model for prevention.

High homocysteine levels can be diagnosed with a simple blood test. If a patient's levels are high, they can easily be reduced through simple substances: folic acid and other B vitamins.

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B Vitamins Decrease Homocysteine Levels

"B" is an umbrella designation for eight different vitamins, each of which performs a unique set of biochemical functions within the body. Together the B vitamins support a vast array of processes essential for maintaining health. Vitamins B6, B12, and folate are especially important for the maintenance of neural health.

Vitamin B6 and B12 create the neurotransmitters serotonin and dopamine; folate is necessary to produce SAMe (needed for the metabolism of mood-regulating neurotransmitters); and vitamin B12 is required for myelin synthesis. A deficiency of any of these vitamins is associated with adverse cognitive and neurologic consequences; a deficiency of vitamin B12, however, is so strongly associated with neurologic decline that it is itself considered to be an independent risk factor for Alzheimer's disease.[10]

Physiologic and Neurologic Sequelae of B12 Deficiency

A deficiency of vitamin B12 has long been implicated in neurologic manifestations such as neuropathy, myelopathy, coordination disorders, and reduced nerve conduction velocity.[10,11] B12 deficiencies are often not identified in clinical practice due to the wide range of variation present in associated neurologic manifestations, as well as the similarities such manifestations bear to other, more well-known pathologies.[11] Practitioners should note the following, however:

- Neurologic disorders are often the earliest and – in some cases – the *only* clinical symptoms of a functional B12 deficiency.[11]
- 75-95% of individuals with a clinically-relevant B12 deficiency have neurologic disorders.[11,12]
- The prognosis for prolonged B12 deficiency is grim.

Research strongly links vitamin B12 deficiency to neurodegenerative disorders. A 2001 study found that serum B12 levels were associated with a twofold increase in risk for incident Alzheimer's within three years in subjects aged 75+.[10,13] Three separate studies conducted by European research teams found B12 levels to be significantly lower in Alzheimer's patients as compared with healthy controls, supporting the premise that vitamin B12 is a risk factor for dementia and Alzheimer's.[10,14-16]

Regardless of whether high homocysteine is causal or merely indicative, the validity and significance of its correlation with Alzheimer's disease cannot be over-emphasized.

The neuronal degradation characteristic of prolonged B12 deficiency can be attributed to several mechanisms. B12 deficiency disrupts cellular redox homeostasis to induce oxidative stress, which is widely implicated in a variety of neurodegenerative disorders.[17] It is also speculated that B12 deficiency may accelerate neuronal atrophy, as evidenced in a University of Oxford study that found a significant association between B12 status and brain volume.[11,18]

A deficiency of B12 results in the failure of vitamin B-dependent methionine biosynthesis and the accumulation of homocysteine.[17] The ability to lower homocysteine levels with folate, vitamin B12 and vitamin B6 offers a direct pathway to modifying Alzheimer's risk.

Mitigating Alzheimer's Risk with Vitamin B: Supporting Evidence

Studies have confirmed that increasing vitamin B levels mitigates homocysteine accumulation and, by extension, the risk of related neurodegenerative diseases such as Alzheimer's. A 2013 study used MRI imaging to examine the association between brain atrophy, changes in brain morphology, and cognitive symptoms of neurologic decline.[19] After undergoing a baseline scan to determine levels of brain atrophy, elderly volunteers designated as 'at-risk' for dementia were randomized to receive either a placebo or a B-vitamin formulation (folic acid 0.8 mg/d, vitamin B12 0.5 mg/d, and vitamin B6 20 mg/d) for a period of 24 months. Subjects taking the placebo showed an accelerated rate of atrophy in gray matter regions associated with Alzheimer's pathogenesis; subjects given B vitamins, however, showed a significant reduction of atrophy in posterior brain regions including the bilateral hippocampus.[19]

A 2014 study further documented the beneficial effects of B vitamins on Alzheimer's by examining the relationship between B vitamin intake and cognitive function amongst the elderly in South Korea.[20] The research team acquired dietary intake data from 100 adults with mild cognitive impairment (MCI), 100 adults with Alzheimer's disease, and 121 normal subjects; blood samples were also collected from all subjects and analyzed for folate, B12, and homocysteine levels. Statistical analysis confirmed the vitamin B–homocysteine relationship: plasma homocysteine was negatively correlated with total vitamin B intake.[20]

Bolstered by such findings, scientists have examined the beneficial impact of B vitamin supplementation upon Alzheimer's with regard to longevity. In 2015, one study randomized Alzheimer's patients to receive either a placebo or a nutraceutical formulation containing B-vitamins (400µg folic acid and 6µg vitamin B12; formulary tablets taken twice daily) for a period of three to six months.[21] At the three-month mark, the cohort taking the nutraceutical formulation showed improvements in cognitive performance and mood. Impressively, these improvements were maintained one year later.[22]

Genetic Considerations

Folate, folic acid, and L-methylfolate are different forms of the same vitamin, and the body handles them differently. L-methyfolate, the biologically active form that is functional at a cellular level, can cross the blood brain barrier to facilitate reactions that promote neurologic homeostasis.

The conversion of folate or folic acid into L-methylfolate requires the enzyme methylenetetrahydrofolate reductase, or MTHFR. This enzyme is produced via expression of the MTHRF gene, but a mutation can inhibit the gene's function. This polymorphism affects about 30% of the population, meaning that a third of all individuals cannot efficiently convert folate into L-methylfolate. Consequently, people with this mutation can eat plenty of folate-rich foods and take folic acid supplements, yet the amount of L-methylfolate that reaches the brain may remain low. And without enough L-methylfolate, required for homocysteine degradation, homocysteine levels can rise. People with MTHFR polymorphism tend to have high homocysteine levels.

While an MTHFR polymorphism cannot be changed, the metabolic hindrance it imposes can be circumvented. People with the MTHFR polymorphism can take supplemental 5-methyltetrahydrofolate (5-MTHF), the active form of folate found in the body. 5-MTHF can easily cross the blood brain barrier.

B vitamin supplements including folate, vitamin B6, and vitamin B12 can easily normalize a patient's homocysteine levels, thereby mitigating a primary risk factor for Alzheimer's disease. As written by the international consortium of experts who together presented an International Consensus Statement, "…the public health significance of raised tHcy … should not be underestimated, since it is easy, inexpensive, and safe to treat with B vitamins."[9]

A New Hope

The numbers associated with Alzheimer's disease are staggering. Countless hours, decades upon decades of research, and billions of dollars have been poured into global efforts to combat this disease, and despite the immeasurable sacrifices of those who have chosen to be part of this initiative, we are hardly better off today than we were 10…30… even 50 years ago. While we know more about the biologic mechanisms underlying Alzheimer's than ever before, incidence rates continue to climb. Pharmaceutical companies have invested their fortunes into efforts towards finding a cure and have little to show for it but a string of abandoned drug trials.

Unfortunately, the impetus to travel the same therapeutic avenues may be inspired by empiricism's distrust of simple solutions. Time and time

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Hope for Alzheimer's

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again, 'big pharma' has attempted to stymie Alzheimer's progression through the manipulations of byzantine cellular pathways that lie far distal to quantifiable effects, or by slowing degradational processes that Alzheimer's has already set in motion. Trying to pharmacologically curtail neuronal atrophy for a patient in whom the disease has already taken hold is much like trying to stop a freight train with a butterfly net, and it is a grim reality that the Alzheimer's mortality rate remains fixed at 100%.

Something has to change.

Instead of viewing Alzheimer's disease through a lens of inevitability, we can accept that Alzheimer's susceptibility lies along a continuum of risk which is dynamic *and thus alterable*. Instead of taking reactionary steps to an already-established case or the ongoing global phenomenon, we can focus our efforts on *prevention*. Instead of focusing on one singular disease pathway and trying to arrest it, we can use low-dose lithium to foster brain health through a variety of pathways and modify known risk factors for Alzheimer's such as elevated homocysteine, deficiencies of vitamin B12 and folate.

The studies reviewed in Part I of this series show that low-dose lithium confers powerful neuroprotection through a multitude of biologic mechanisms. The research reviewed in the present article not only establishes that homocysteine and B vitamins are significantly correlated with Alzheimer's, but also that the modification of serum levels of these nutrients confers neuroprotection and substantially reduced risk. The use of low-dose lithium and the mitigation of elevated serum homocysteine through B vitamin supplementation are simple, accessible, affordable, and effective tactics by which individuals can decrease their Alzheimer's risk:

- Lithium may be most effective in preventing age-related neurologic decline and treating early-stage Alzheimer's when used at micro-dose levels; studies have confirmed that doses as low as 0.3mg/day exert measurable neuroprotective and cognition-enhancing effects.[23]
- A simple blood test will determine homocysteine levels, and high levels are easily treated through B vitamin supplementation

A combination of B vitamins and low-dose lithium offers the best strategy currently available to protect the brain from the devastation of neurodegenerative disease. This strategy, in concert with a shift in focus towards prevention, offers patients and medical practitioners worldwide legitimate hope that the tide of Alzheimer's can be turned.

References

1. Kim TH, Moon SW. Serum homocysteine and folate levels in Korean schizophrenic patients [published online ahead of print January 20 2011]. *Psychiatry Investig*. 2011; 8(2): 134-40
2. Smith AD, Refsum H, Bottiglieri T et al. Homocysteine and dementia: An international consensus statement. *J Alzheimer's Dis.* 2018; 6(2): 561-570.
3. Evans, JG. Geriatric medicine: A brief debate. *BMJ*. 1997; 315:1075–1077.
4. Nagy Z, et al. Hyperhomocysteinaemia in Alzheimer's disease and expression of cell cycle markers in the brain. *J Neurol Neurosurg Psychiatry*. 2000; 69(4): 565–566.
5. Dawber TR, Meadors GF, Moore Jr. FE. Epidemiological approaches to heart disease: The Framingham Study. *Am J Public Health Nations Health*. 1951; 41: 279-281.
6. Seshadri S, Beiser A, Selhub J et al. Plasma homocysteine as a risk factor for dementia and Alzheimer's disease. *N Engl J Med.* 2002; 346(7): 476-483.
7. Ford AH, et al. Plasma homocysteine and MTHFRC677T polymorphism as risk factors for incident dementia [published online ahead of print July 11 2011]. *J Neurol Neurosurg Psychiatry.* 2012; 83(1): 70-75.
8. Bengtsson C, et al. The study of women in Gothenburg 1968-1969-a population study. General design, purpose and sampling results. *Acta Med Scand*. 1973; 193: 311–318.
9. Smith AD, et al. Homocysteine and Dementia: An International Consensus Statement. *J Alzheimer's Disease*. 2018; 62(2):561-570.
10. Moore E, et al. Cognitive impairment and vitamin B12: A review [published online ahead of print January 6 2012]. *Int Psychogeriatr*. 2012; 24(4): 541-546.
11. Gröber U, Kisters K, Schmidt J. Neuroenhancement with vitamin B12-underestimated neurological significance. *Nutrients*. 2013; 5(12): 5031-5045.
12. Standing Committee on the Scientific Evaluation of Dietary Reference Intakes and Its Panel on Folate, Other B Vitamins, and Choline and Subcommittee on Upper Reference Levels of Nutrients; Food and Nutrition Board; Institute of Medicine. *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B6, Folate, Vitamin B12, Pantothenic Acid, Biotin, and Choline*. Washington, DC: National Academy Press; 1998.
13. Wang HX, et al. Vitamin B(12) and folate in relation to the development of Alzheimer's disease. *Neurology*. 2001; 56(9): 1188-1194.
14. Köseoglu E, Karaman Y. Relations between homocysteine, folate and vitamin B12 in vascular dementia and in Alzheimer disease [published online ahead of print April 27 2007]. *Clin Biochem*. 2007; 40(12): 859-863.
15. Malaguarnera M, et al. Homocysteine, vitamin B12 and folate in vascular dementia and in Alzheimer disease. *Clin Chem Lab Med*. 2004; 42: 1032–1035.
16. Clarke R, et al. Folate, vitamin B12, and serum total homocysteine levels in confirmed Alzheimer disease. *Arch Neurol.* 1998; 55(11): 1449-1455.
17. Alam P, et al. Vitamin B12 offers neuronal cell protection by inhibiting **Aβ**-42 amyloid fibrillation [published online ahead of print March 4 2017]. *Int J Biol Macromol.* 2017; 99: 477-482.
18. Vogiatzoglou A, et al. Vitamin B12 status and rate of brain volume loss in community-dwelling elderly. *Neurology.* 2008; 71(11): 826-32.
19. Douaud G, et al. Preventing Alzheimer's disease-related gray matter atrophy by B-vitamin treatment [published online ahead of print May 20, 2013]. *Proc Natl Acad Sci USA.* 2013; 110(23): 9523-8.
20. Kim H, et al. Association between intake of B vitamins and cognitive function in elderly Koreans with cognitive impairment. *Nutr J*. 2014; 13(1): 118.
21. Remington R, et al. A nutritional formulation for cognitive performance in mild cognitive impairment: A placebo-controlled trial with an open-label extension. *J Alzheimers Dis*. 2015; 48: 591-595.
22. Remington R, et al. Maintenance of Cognitive Performance and Mood for Individuals with Alzheimer's Disease Following Consumption of a Nutraceutical Formulation: A One-Year, Open-Label Study. *J Alzheimers Dis*. 2016; 51(4): 991-5.

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Effective Treatment of Pain and Sleep in Fibromyalgia – A Comprehensive Clinical Approach

by Jacob Teitelbaum, MD

Fibromyalgia is dramatically increasing in both prevalence and public awareness. Unfortunately, most standard physicians are only taught about three "Band-Aids" for pain: the medications Lyrica, Cymbalta, and Savella. Though modestly effective, there is a bright spot. These companies are spending $210 million a year to increase public and physician awareness of this condition.

Although most people suffering with these conditions don't get much help from their standard physician, CAM is highly effective. Our published placebo-controlled study (available on request from fatigueDoc@Gmail.com, along with free and very helpful treatment tools for practitioners) shows that 91% of people improve by using a comprehensive SHINE Protocol addressing Sleep, Hormones/Hypotension, Infections, Nutrition, and Exercise as able. This protocol resulted in an average 90% increased quality of life ($p < .001$ versus placebo).

In this article, we will discuss how to optimize sleep and eliminate pain.

Problems with Sleep and Pain – The Causes

Fibromyalgia represents an energy crisis caused by dozens of underlying contributing factors. This results in hypothalamic – pituitary axis dysfunction. The hypothalamus uses more energy for its size than any other area in the body, causing this to act like a circuit breaker that goes off-line when energy drops below a certain point. The hypothalamus is also the sleep center, resulting in problems both falling and staying asleep.

In fact, a simple and highly effective way to determine whether severe fatigue and widespread pain are being caused by fibromyalgia is to ask one simple question. "Can you get a good night's sleep?" Most people with severe fatigue from other causes can sleep. The paradox of inability to sleep despite being exhausted points to hypothalamic dysfunction. This is true even if other conditions such as lupus or multiple sclerosis are present, as secondary fibromyalgia is common from autoimmune conditions and also needs to be addressed for the person to improve.

Meanwhile, it takes more energy for our muscles to relax than to contract. Though counterintuitive, this is why after a heavy workout our muscles go tight instead of loose and limp. Chronic muscle tightness results in myofascial pain, which is what initiates the fibromyalgia pain process.

Chronic pain from many causes can trigger the brain to amplify the pain. This is called central sensitization. A simple way to explain this to the people you treat is that pain is not an outside invader. Rather, it is like the oil light on a car's dashboard telling us that something needs attention. When the pain does not result in getting what the body is needing, it gets amplified (central sensitization or "brain pain").

For those that are interested, here's my theory about what then occurs (okay to just skip to the next paragraph). Over time, the chronic nerve firing exhausts the energy in the nerves. I suspect the mechanism is that low energy in the nerves triggers elevated cyclic AMP levels. This then stimulates HCN2 gene ion channels, which triggers nerves to auto-fire (like the pacemakers in the heart). This causes pain and further depletes energy, making the problem chronic. Over time, the small nerve fibers start to shrink back (called small fiber neuropathy). This triggers not only pain but also orthostatic intolerance and dysautonomia.

So there is a cascade of events triggering multiple kinds of pain.

The standard medical approach to pain? Put a Band-Aid over the oil light or surgically remove it. Understandably, this results in a poor outcome. For example, research shows that NSAIDs cause 30,000 – 50,000 preventable US deaths a year, and overdoses from prescribed narcotics another 15,000.

A Better Approach to Pain

Our research has shown that if you give the body what it needs, the pain goes away. To extend the analogy, when you put oil in the car, the oil light goes out. The question is how to tell what the body is asking for.

Here Is your "Body's Owner's Manual" for doing so. The popular free Cures A-Z phone app also does this for hundreds of health conditions. I find that the vast majority of pain, even when severe and chronic, can be effectively treated with CAM.

Four Key Health Domains for Eliminating Pain

Most illnesses do best when these four key domains of health are addressed:

1. Biochemistry. This includes nutrition, herbals, and medications.

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2. Biophysics. This Includes many Energy Healing approaches, including things such as acupuncture and NAET. An especially excellent one for pain is called Frequency Specific Microcurrent (www.FrequencySpecific.com).
3. Structural. This includes ergonomics, manipulation techniques, surgery, massage, and myofascial release. It also includes fascia release, which is a rapidly evolving and very powerful new area which combines energy and structural approaches.
4. Mind-Body. Unexpressed feelings can often be trapped in muscles. Emotional and physical trauma can also cause the fascia to get stuck in the "frozen" mode. Put simply, there is a reason why some people are called a "pain in the back" – or even lower!

Standard medicine uses only medications and surgery – a very small part of the entire healthcare toolkit. People do best when the entire healthcare toolkit is available, instead of just the medical "hammer."

The Seven Key Types of Fibromyalgia Pain

Muscle (myofascial pain) from decreased energy in the muscles. When the muscle shortens, you get those tender knots in the belly of the muscle called trigger points, along with tender points. When the pain is localized, it often comes from muscle strain from poor ergonomics, uneven hip heights, or repetitive stress injury. Correcting these can be helpful.

When the pain is generalized, as in fibromyalgia, this reflects a body-wide energy crisis. Optimizing energy production with the SHINE Protocol is based on the groundbreaking work by Prof. Janet Travell, and has been shown in our research to be dramatically effective at decreasing pain. This occurs as improved energy conditions in the muscles allow them to relax. A free 10-minute quiz called the Energy Analysis Program at www.vitality101.com (see step three) can determine the causes of the low energy and tailor a comprehensive program to optimize energy production.

Chronic muscle shortening can also trigger both inflammation and strain of their attaching tendons.

The most effective single herbal mix that I have found for pain is called CuraPhen (by Euromedica – available through Emerson Ecologics). This mix of a unique highly absorbed curcumin, boswellia, DLPA, and nattokinase is the first thing I give people with chronic pain, and it has been a pain relief

miracle. It can be taken with any pain medications. I will often add topical comfrey (TraumaPlant) and an herbal mix called the Pain Formula (ITI). Give the herbal mixes six weeks to see the full effect. All of these can be used in combination and along with any pain medications.

Nerve pain. As discussed above, this generally results from uncontrolled repetitive firing. Numerous medications can help this. Supplements such as lipoic acid 300-600 mg twice a day and acetyl L carnitine 1000 mg 2 to 3 times daily has been shown to help nerve pain over time as well. A good multivitamin is also helpful. Be sure it does not have over 45 mg of vitamin B6, as this can actually aggravate nerve pain. *In general, the Daily Energy Infusion vitamin powder (by Integrative Therapeutics) is my favorite multivitamin for most people I treat.* It contains over 50 pills worth of optimized levels of most nutrients lost in food processing (except iron and essential fatty acids). And it does so in only one low-cost drink instead of a handful of pills.

Especially helpful for diabetic neuropathy and likely other kinds of nerve pain is intravenous lipoic acid. Interestingly, when combined with low dose naltrexone (3– 4.5 mg at bedtime), the lipoic acid can be very helpful not only for neuropathy but even for late stage cancers. This was excellent work by Dr. Burt Berkson, and combining the lipoic acid IV and PO with LDN often resulted in marked regression of metastases.

One protocol is to give 600-800 mg alpha lipoic acid in 250 cc's of normal saline over one hour three times a week ongoing for cancer, and until nerve pain resolves for neuropathy. Some will then give 1000 mg (and occasionally even up to 1500 mg) of the alpha lipoic acid IV monthly for maintenance. The main concern with higher doses is hypoglycemia, so have some D50 IV syringes available to address this if symptoms occur when using the IV lipoic acid. Oral alpha lipoic acid should be given 300 – 600 mg twice daily ongoing as well.

Central sensitization or brain pain. When pain becomes chronic, the brain starts to amplify the pain. This can occur in many if not most kinds of chronic pain. The mechanism is called microglial activation. The microglia are like the gardeners in our brain's garden, tending the brain cells. Normally, they are quite mellow. But like a gardener who sees weeds, with chronic pain they start to go wild and become over active, stimulating brain pain.

The problem is not lack of effective treatment for pain, but rather inadequate physician education about the research.

Although many medications are now geared towards masking the pain of central sensitization, there are a few that can actually help to turn it off. These include low-dose naltrexone and the antibiotics doxycycline or minocycline (a tetracycline) 100 mg twice daily. This is one reason why doxycycline has been shown to be so effective in rheumatoid arthritis and many chronic pain conditions, including fibromyalgia, although this research has largely been ignored because of the medication's low cost. For more on this amazing medicine for pain, cancer, and autoimmune illness, see the new book *The Power of Honest Medicine: LDN, the Life-Changing Treatment for Autoimmune Diseases* by Julia Schopick.

Give the naltrexone (from compounding pharmacies) 3-4.5 mg each night. If it disrupts sleep, start with 1 mg and increase by 1 mg every 2 to 4 weeks. If problematic even at lower doses, simply give it in the morning instead. It takes two months to see the full effects, and I will continue it ongoing. Dosing over 4.5 mg actually eliminates the effectiveness. The medication cannot be given if people are on narcotics (it does not block the narcotic effect at this low dose, but the LDN simply will not work), although it is unclear whether it will work if given with tramadol (Ultram).

Migraine headaches. This is due to blood vessels in the brain having difficulty regulating their ability to expand and contract. Interestingly, vitamin B2 400 mg a day has been shown to decrease migraine frequency by approximately 69% after six weeks. Vitamin B12 (200 – 500 µg) and magnesium 200 mg a day also markedly decrease migraine frequency. These can easily be found in a high potency multivitamin such as the Energy Revitalization System vitamin powder or Clinical Essentials. Food sensitivities and shifts in estrogen and progesterone also play important roles in some cases. Suspect the latter when the migraines happen mostly around menses and ovulation. Using an estrogen patch to give stable estrogen levels during those periods can have dramatic benefit.

Sinus headaches and irritable bowel syndrome. Both of these processes are most often due to Candida (fungal/yeast) infections. Unfortunately, the sinusitis is usually treated with antibiotics which actually makes the yeast problem worse in the long term, triggering chronic sinusitis. Most women are familiar with this when antibiotics trigger vaginal yeast infections.

A far more effective treatment for chronic sinus problems is using a good probiotic along with the medication Diflucan 200 mg a day for 6 – 12 weeks along with Caprylex by Douglas Labs. For the sinusitis, compounding pharmacies can make a sinusitis spray that includes antifungal and antibacterials (available by prescription by mail from ITC pharmacy in Colorado). This combination can be very helpful after 6 – 12 weeks.

The Diflucan plus Caprylex can also be very helpful for the irritable bowel syndrome, as in most cases this is secondary to Candida. In some cases though, the IBS will reflect a *bacterial* overgrowth in the small intestine. A

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simple marker? If the persons flatus has a sulfur smell (think "silent but deadlies" back in grade school), it is most likely bacterial (SIBO or Small Intestinal Bacterial Overgrowth). In these cases, and herbal mix called Ultra MFP Forte (two twice a day for one month) can be quite helpful as can the antibiotic rifaximin.

Fortunately, virtually all pain can be effectively treated using a mix of standard and holistic treatment options. The problem is not lack of effective treatment for pain, but rather inadequate physician education about the research.

The free practitioner treatment tools available from FatigueDoc@Gmail.com include a detailed treatment checklist on sleep (and over a dozen other areas) listing both natural and prescription options.

Allodynia. This is when light touch on the skin is painful. This results from an increase in a brain neurotransmitter chemical called NMDA and can improve with compounded topical pain creams including ketamine and NMDA receptor antagonist medications such as Namenda.

Small fiber neuropathy. When chronic pain and central sensitization become prolonged, the small nerve fibers in the body may start to shrink back. This can also result in problems from low blood pressure and heart rate control called orthostatic intolerance and POTS. A simple one-minute quiz (you can request this from me at FatigueDoc@gmail.com) can effectively screen for these low blood pressure issues, and they are very treatable – although most physicians are not familiar with them. Interestingly, small fiber neuropathy seems to be associated with immune depletion and can respond well to intravenous gamma globulin as well as treating the underlying chronic infections and using the SHINE Protocol overall.

Optimizing Sleep in Fibromyalgia

Sleep is when tissue repair and growth hormone release occur. A number of studies have confirmed that inadequate sleep results in pain simply not going away. So, helping the person to get seven to eight hours of good solid sleep at night despite their hypothalamic sleep center not working is critical.

No single treatment will be enough to achieve this. If you give a high enough dose of one treatment to keep them sleeping for eight hours, the person will be hung over into late afternoon. Instead, it is essential to use low doses of several treatments combined. The free practitioner treatment tools available from FatigueDoc@Gmail.com include a detailed treatment checklist on sleep (and over a dozen other areas) listing both natural and prescription options. Here are my favorites:

Natural Options

1. The Revitalizing Sleep Formula (by Integrative Therapeutics). This mix of valerian, lemon balm, passionflower, hops, 5 HTP, and theanine is outstanding for sleep. Give 2 – 4 capsules at bed time
2. Terrific ZZZZ (by EuroPharma). An excellent mix of essential oils
3. Melatonin. Most have minimal effect here. An exception is Nature's Bounty Dual Spectrum 5 Mg Melatonin (Amazon or Walgreens). This has both immediate and sustained release
4. Magnesium (If diarrhea I give the Jigsaw Sustained-Release Form) 150 – 200 mg at bedtime. Alternatively, a hot bath with 2 cups of Epsom salts (magnesium salts) an hour before bedtime can be very helpful for both pain and sleep

Medications

1. Ambien or Lunesta to help people fall asleep. These can have significant side effects (including sleepwalking and eating) as well as rebound insomnia when stopped. Nonetheless they can be very helpful. To help people stay asleep, I add
2. Trazodone (Desyrel) 25 – 50 mg
3. Cyclobenzaprine (Flexeril) 2.5 – 5 mg
4. Neurontin 100 – 600 mg
5. Benadryl 12.5 – 50 mg

Although fibromyalgia requires a comprehensive protocol to see optimal results, the parts of the protocol above can result in dramatic improvement. The free Energy Analysis Program at www.Vitality101.com (step three) is a 10 minute quiz which can analyze the person's symptoms, and even lab tests if available, to determine the main causes of their energy crisis and tailor a protocol to optimize their energy. By having the person fill out the symptom checklist that is part of the free treatment tools, your staff can enter the results into this program and generate a free detailed report that will make you look like a wizard! So, you now have all the tools you need to be a fibromyalgia expert – today! ◆

Jacob Teitelbaum, MD, is the author of the best-selling From *Fatigued to Fantastic!*, *Pain Free, 1,2,3!,* and *The Fatigue and Fibromyalgia Solution*. He is the lead author of four studies on effective treatment for fibromyalgia and chronic fatigue syndrome.

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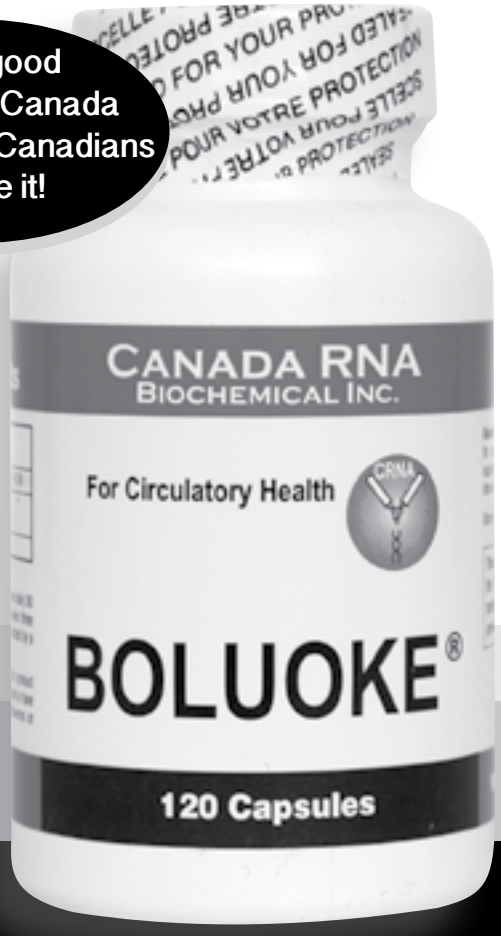

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Drug Addiction, Pain Control, and Cure

by Reagan Houston

Introduction

About 100 people die each hour of drug addiction.[1] This article explains how both drug addiction and chronic pain can be cured. In both cases the pain signal or narcotic signal is absorbed on the opiate receptor sites in the brain.[2] Opiate receptors are groups of protein cells on the semipermeable cell membranes. Fortunately, vitamin C (ascorbic acid and sodium ascorbate) can wash both pain and narcotic signals from the receptors. Then ascorbate loads the receptors to give us pain control without the bad side effects of narcotics. Thus we have little or no pain, no constipation and no craving.

Many clinics, large and small, offer therapy for drug addiction. Many depend on methadone therapy. The opiate receptors are usually not purged free of narcotic. Teaching the body to neglect severe scurvy and the opiate craving by consultation is difficult when the mind is weakened by both scurvy and the narcotics. The opiate problem remains.

People with chronic pain (or drug addiction) who eat regular meals have a simple therapy available. They can take high oral doses of vitamin C (ascorbic acid or sodium ascorbate). Vitamin C is safe even at 200 grams of vitamin C per day.[3] For example, one person who had an infected tooth and extreme pain took 70 grams of ascorbic acid over two hours. About four hours later the pain stopped, but diarrhea started and continued for about 12 hours and then stopped. Slight pain reoccurred, and she took 1 to 3 grams of vitamin C per day. She remained pain free for a month and continuing. The following examples showed that vitamin C is safe for curing drug addiction or chronic pain. Hopefully a few volunteer drug addicts will chose to cure themselves.

Large doses of vitamin C can displace both the pain signals and narcotics off of the opiate receptors.

Examples

Starting in 1971, Ewan Cameron, consultant surgeon in a Scottish hospital, was treating cancer patients who had pain from cancer that was expanding within bone. These patients were receiving narcotics.[4] His treatment was sodium ascorbate as a possible cancer therapy. The patients were regularly given 10 grams (10,000 mg) per day of vitamin C as sodium ascorbate by IV rather than orally. About a week after starting the sodium ascorbate, the five patients had little or no pain, no craving, and stopped asking for narcotics. The patients had no withdrawal symptoms. As long as they received sodium ascorbate, they were craving-free and pain-free. Diarrhea can be a problem but Cameron's patients probably had little or no diarrhea since Cameron did not mention diarrhea. *Vitamin C can control both pain and craving*.

In 1977, Alfred Libby, MD, a family doctor, and Irwin Stone, MD, a researcher of vitamin C, were treating street drug addicts. They suggested that vitamin C mimics morphine. When the opiate receptors were loaded with narcotic signals, pain was much less.[2] Large doses of vitamin C can displace both the pain signals and narcotics off of the opiate receptors. Vitamin C has controlled pain without nasty withdrawal side effects.[3]

Libby treated drug addicts by stopping the narcotics and starting them with at least 25 grams of sodium ascorbate in milk taken in a three- or four-hour period. If this did not stop the craving he would increase the first-day dose up to 85 grams or more. This dose was continued for three or four days total until craving fully stopped. Then he decreased the sodium ascorbate to 10 grams per day or less to maintain pain control but stop diarrhea.[5] Of Libby's first 30 drug addicts, all 30 were cured of craving. L. Benade reported that if one's blood has too much glucose such as from sugar in the diet then vitamin C cannot enter cells.[5] However, people can take vitamin C one hour before or two hours after a meal to separate vitamin C intake from the blood glucose peak if necessary.

In the 1980s, Robert Cathcart, MD, was one of the few physicians who treated his patients with high doses of vitamin C, up to 200 grams per day.[3] Cathcart had pain from his eye surgery.[6] As his initial narcotic was wearing off, he started taking ascorbic acid at 12 grams every 15 minutes for 90 minutes for a total dose of 72 grams. This large dose

loaded the receptors with ascorbate. Then he had "absolutely no pain." Next he dropped the vitamin C to a small variable dose of about 1 to 10 grams per day of vitamin C, a dose that continued the pain control but was not enough to cause diarrhea and again he reported no pain.

Cecilia England, my friend who lives in Landrum, South Carolina, had an infected tooth with a pain level of 8 to 9 out of 10 maximum. She took no pain control, only antibiotics. Pushed by the pain, she took 70 grams of ascorbic acid pills in 90 minutes. After about four hours, the pain stopped but diarrhea started and lasted about 12 hours. She has been taking 1 to 3 grams of vitamin C daily to stay pain free for a month and continuing. If pain returns she can start high dose vitamin C to repeat the process. The time to purge the receptors of narcotic or pain and saturate with ascorbate varies with the vitamin C dose and the individual patient. *Oral vitamin C can control pain and craving in a few hours or days.*

Pain Therapy

For those with bad pain such as from surgery or a fall, the England therapy may be helpful. Take 70 pills of 1,000 mg (one gram) of ascorbic acid over a period of two hours with water. The pills may have no obvious effect for about four hours. Then the pain may stop, and diarrhea starts. Stay close to the restroom and wipe with wet toilet paper. After about 12 hours more, the diarrhea should stop. If minor pain starts, take vitamin C at 1 to 3 grams per day or more if necessary. Your bad diarrhea day may give you a month free of pain. You no longer need a narcotic to stop the pain,

Drug Addiction Therapy

We will look at the therapies of Libby and Kalokerinos since both are based on Libby's article.[7] Dr. Kalokerinos offered the following schedule for sodium ascorbate use:

1. Give 6 gm of sodium ascorbate every two hours. Then give 4 gm for eight doses total (in orange juice only) for first 30 hours in two or three days.
2. For the second day or third day, if any symptoms remain give 2 gm every hour instead of 4 gm every two hours.

After diarrhea is well established, decrease vitamin C to 12 gm per day as needed. Then, the following vitamins are given beginning with first sodium ascorbate dose: pantothenic acid, 200 mg/day, for adrenal support; zinc, 180 mg/day, for appetite; vitamin B6, 25 mg four times a day, for metabolism. Dr. Kalokerinos also recommended several pills no longer made by Bronson, so I have substituted similar items (Table 1).

Diarrhea must be maintained until craving has stopped. This may take from 12 hours to 12 days. Have a doctor's supervision if over two days. Then the sodium ascorbate may be decreased to about 10 grams per day or less to stop craving and stop diarrhea. Imodium at a

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maximum dose of eight pills per day of 2 mg size may be tried to stop diarrhea.[8]

For drug addicts, a "high protein diet is recommended," by Kalokerinos, such as "boiled eggs, dairy products, including milk, any fresh fruit and vegetables or white meat. Avoid junk food, starchy foods and any refined carbohydrates."

When the patient is awake but not taking other ascorbate pills, the patient should take a rounded teaspoon (about 4 grams) of sodium ascorbate in milk or orange juice every hour on the hour. If the craving reappears unexpectedly, the patient can take more sodium ascorbate as necessary.

Overdose Treatment

Libby suggested that overdose patients can be treated by 50 gram of sodium ascorbate in milk or water if patient can swallow and retain food. Unconscious patients can be treated with 30 to 50 grams of sodium ascorbate in sterile water given by IV slowly.[2]

Addiction without any narcotic intake lets the body slowly clear the opiate receptors, a highly uncomfortable, lengthy "withdrawal." To help drug addicts, methadone is available as a legal narcotic to replace illegal narcotics. In practice, methadone has side effects as bad as other narcotics and may leave patients anxious to get a shot of regular narcotics.[2] Methadone has not been helpful at stopping addiction. Attempts to lower the number or strength of narcotic doses have helped but not enough.

Table 1

Current Bronson Name	Dose & Frequency
Calcium Complex and Magnesium	Three tablets are given every 2 hours for 8 doses (16 hours) and then stopped.
High Potency Super Vitamin B 100 Complex Sustained Slow Release	After eating is normal, three tablets every 2 hours during day time, as needed
Vitamin & Mineral Insurance Formula	2 per day as needed

Conclusion

As I see it, drug addiction causes a wide range of physical, physiologic, psychological, and nervous disorders, all of which must be considered in the treatment and rehabilitation by proper social workers. This completes the therapy.

Your doctor may be uncomfortable with high doses of vitamin C. Four of the examples given above were done by MDs. Most doctors were never taught how to use vitamins for therapy, including vitamin C. The FDA has rules against doctors using non-standard therapies such as vitamin C. People and patients are not restricted in taking vitamin C. Vitamin C is highly safe and effective against drug addiction. Many drug addicts may want to cure themselves. Judges or others may be authorized to require vitamin C therapy for certain or repeat drug addicts.

Vitamin C for addiction treatment can be used no matter how long the person has been a drug addict or the types of drugs used. People can save their marriages and jobs. They can take better care of their children. They can even save their friends. Since narcotics harm the body, addicts might also improve their own health with vitamin C. Patients are in charge of their health.

With the present US drug addiction problem, vitamin C could be a great help in decreasing the number of drug addicts. Drug addicts in jail might volunteer to be cured. Easy, economical, control of chronic pain and addiction could lower the cost of health care and possibly lower our national debt. Vitamin C can provide relief for many with chronic pain. With pain under control, narcotics may be used less and for shorter intervals. Pain may stop being a cause of addiction.

Vitamin C can control long-term chronic pain safely. It can often control drug addiction for most types of narcotics by stopping pain and craving, and can help recover patients from a narcotic overdose, all without causing pain or withdrawal pains. Vitamin C is low cost.

Reagan Houston, MS, PE, a professional chemical engineer, lives in Hendersonville, North Carolina, USA. He has a dozen patents on air pollution control. When diagnosed with aggressive prostate cancer 21 years ago, he controlled the cancer with vitamins and some hormones. He never needed nor had surgery, radiation or chemotherapy. With vitamins, diuretics and a pacemaker he controlled his congestive heart failure. He regularly takes 12 grams of ascorbic acid. He has published two books on cancer and health. His blog and web site is www.cancertherapies.org. He can be reached at h@cancertherapies.org. He is hard of hearing, so please use email.

References

1. Annual Causes of Death in US. *Drug War Facts*, 2014. Downloaded 2/13/2017. Available at http://drugwarfacts.org/cms/causes_of_death#sthash.fa24o8B1.dpbs.
2. Libby AF, Stone I. The Hypoascorbemia-Kwashiorkor approach to drug addiction: a pilot study. *Orthomolecular Psychiatry*. 1977; 6(4): 300-308.
3. Benade L, Howard T, Burke D. Synergistic killings of Ehrlich ascites carcinoma cells by ascorbate and 3 amino-1, 2, 4-triazole. *Oncology.* 1969; 23:33-43.
4. Cameron E, Pauling L. *Cancer and Vitamin C.* Philadelphia: Camino Books; 1979 & 1993,
5. Cathcart R. Vitamin C, Titrating to Bowel Tolerance, Anascorbemia, and Acute Induced Scurvy. *Medical Hypotheses*. 1981.7:1359-1376.
6. Cathcart R. *Vitamin C in High Doses Provides Significant Pain Relief*. Date unknown. Downloaded July 7, 2017, Available at http://vitamincfoundation.org/www.orthomed.com/pain.
7. Kalokerinos A, Dettman G. *Orthomolecular Treatment of Drug Addiction*, A First Australian Report, 1953.
8. Finch M. How to Use Loperamide for Opiate Withdrawal. January 22, 2015. Available at https://opiateaddictionsupport.com/how-to-use-loperamide-for-opiate-withdrawal/. Downloaded 4/4/2018

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Application of the Restoration Model in Today's Medical Practice

by Jean-Ronel Corbier, MD, and Paul Corbier, MD

This is part II of an article entitled "The Restoration Model" that was published last year in the *Townsend Letter*. In part I, we introduced you to this model. It is one that is wholistic and integrative and was developed specifically to address the complex and sometimes seemingly refractory cases that we all face at times in our practices.

To review briefly, the highlights of this model included the following:

- The Restoration Model is based on the concept that a return to optimal health is possible (even in difficult and complex cases).
- A person can return to normal (optimal health) if the underlying problem(s) and their secondary affects are corrected. To affect this healing, though, we must use safe and effective tools.
- We are complex beings with a body, mind, and spirit. We have emotional and spiritual needs as well as more tangible bodily requirements. A disturbance in any of these areas can affect all the others.
- To remain healthy or return to health, we must follow a set of principles, health laws, and guidelines that promote wellness. There are no shortcuts.
- Full restoration is possible with the right approach (using a biopsychosociospiritual approach), time, and patience.

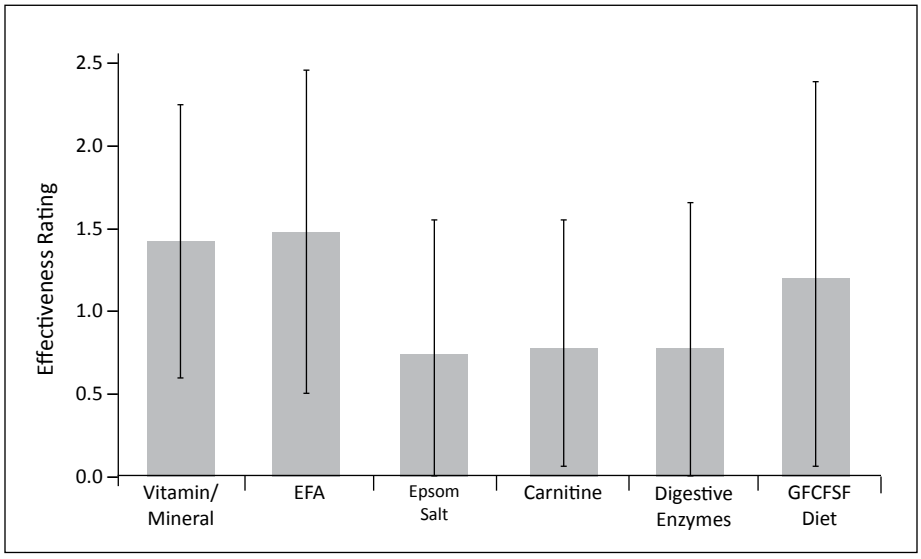
To read or review the first article, please see the *Townsend Letter*, December 2017, article "The Restoration Model."

In this article, we will describe a practical and tangible application of the Restoration Model.

To start, let me share a quote from Thomas Edison that can summarize our Restoration Model approach to healthcare: "Being busy does not always mean real work. The object of all work is production or accomplishment and to either of these ends there must be forethought, system, planning, intelligence, and honest purpose, as well as perspiration. Seeming to do is not doing."

To paraphrase the above in the context of the Restoration Model, we might say "doing tons of meaningless tests and recommending to patients a plethora of treatments in an untimely and unsystematic fashion seldom translates into getting real medical help." The true object of treatment whenever possible should be healing or finding a cure and to either of these ends there must be a well laid out treatment plan, setting clear metrics, patient support, education, and a healthy infusion of compassion, caring, optimism, and hope. Going to the ➤

Figure 1. Effectiveness of each treatment as rated by parents. This is rated on a scale of−3 (much worse) to 0 (no effect) to 1 (slightly better) to 2 (better) to 3 (much better). Error bars represent standard deviations (*Nutrients*. 2018;10: 369).



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doctor to get help without receiving the above and without the doctor going the extra mile does not guarantee that a patient with a complex condition will improve and, in some cases, things may get worse ("Some remedies are worse than the disease," according to Publilius Syrus, a Roman writer, 85 BC-43 BC).

Since I wrote my first *Townsend Letter* article, I have been joined in my medical practice by my brother, Paul Corbier. We are identical twins, and we are both physicians and see all patients together. We have a lot in common, but not everything. He is right-handed whereas I am in my 'right mind', that is, I am left-handed. He did not follow the script and ended up in an alternate medical field, i.e. internal medicine whereas I chose the best specialty there is, pediatric neurology! What we do have in common is that after years of practicing in conventional medicine settings, we have broken loose from traditional medicine. Paul has a background in correctional medicine and has been a prison doctor for many years until he joined my practice this year. Both Paul and I have removed the shackles of conventional medicine and have embraced a new model, an innovative approach, a unique construct that we call 'The Restoration Model'. It has been our pleasure, being independent physicians and free thinkers to implement features of this model in our daily practice of medicine. We will share with you our collective experience and explain practical concepts and tools that can be applied in every functional medicine and integrative medical practice.

Dr. Paul Corbier (who previously served as the state medical director of the largest correctional healthcare system in Kansas) states that one of the unique aspects of medicine and healthcare that many seldom think about is correctional medicine. This may be because the inmate population tends to be all but invisible to main society or "the free world," a term commonly used in the correctional milieu.

One legal concept worth emphasizing that most people in that system must think about is the legal concept of *Deliberate Indifference*. Deliberate indifference is the conscious or reckless disregard of the consequences of one's acts or omissions. In law, the courts use the deliberate indifference standard to determine if a medical provider has violated an inmate's civil rights. Deliberate indifference occurs when a professional knows of and disregards an excessive risk to an inmate's health or safety. Dr. Paul Corbier sometimes wonders if this concept can be applied to other health-related organization outside of the prison system. Can some large health-related organizations be involved in the delivery of services that they know may be of harm to the public but, for matters of greed, special interests, or other self-serving purpose do so anyway? Could the concept of deliberate indifference therefore be applied to these institutions?

On a more individual and ethical level, Paul Farmer (humanitarian, Harvard professor, medical anthropologist and physician) wrote: "For me, an area of moral clarity is: you're in front of someone who's suffering, and you have the tools at your disposal to alleviate that suffering or even eradicate it, and you act." In the context of the Restoration Model, having the right tools is imperative. Coupled with experience, compassion, and a systematic game plan, tools can get the job done as far as healing and restoration. What tools are worth considering? Let us look at a few tools we feel are most important.

Competent and individualized evaluation. To do an effective evaluation (especially in complex and chronic cases), according to the Restoration Model, it is often necessary do so by having an appropriate framework. For instance, we often use the concept of 'trauma'. Simply put, complex illnesses may result from one or more traumas that can take on many forms and can start as early as the prenatal period. Our job is to find and properly define these insults and then we can address them appropriately. Trauma can be physical, emotional, psychological or even spiritual (as in the case of scrupulosity where internal conflicts pertaining to spiritual matters exist causing severe OCD). As far as physical trauma, this can be broken down further into subcategories, including toxicological/environmental, microbial, metabolic, cellular/oxidative stress, etc. The same can be said for each category. We must take into consideration the *exposome* (the measure of all the exposures of an individual in a lifetime and how those exposures relate to health. An individual's exposure begins before birth and includes insults from environmental and occupational sources). This contrasts with the human genome, which is also very important to the extent that in our practice we make it a point to address genetic factors in all complex patients. (We are fascinated by the clinical information we can obtain by obtaining whole exome sequence testing, pharmacogenetic testing and other genetic information that directly impact patient care).

The challenge is being able to think four dimensionally in the sense that it is a mistake to only address 'physical trauma' when there often can be co-existing psychological trauma or emotional ones. Worse yet, one may spend a lot of time and energy perusing a physical trauma whose origin is really in the psychological realm – like the young woman I took care of many years ago with non-stop convulsive seizures, treated unsuccessfully with seizure medications, who turned out to have a stress-based, non-epileptic seizure. Counseling not medication was the answer.

Regarding lab evaluations we must be very cautious. First, we must acknowledge that there is a difference between lab values that fall in the reference range versus an 'optimal range of level' which is more desirable. Second, a blood test that comes back normal (or even optimal) does not rule out a problem. A good example is found in a neurological condition called 'glucose transporter type 1 deficiency syndrome' where blood glucose levels appear normal but due to a failure to transport glucose into the brain, there is low glucose in the cerebrospinal

fluid (and hence the brain) causing seizures and cognitive (as well as behavioral) problems. There are many other examples, but the bottom line is one must be persistent when there is a problem even if the labs come back normal.

Food is another tool. When used properly, food can be a powerful tool for a variety of disorders whether one is dealing with an awful autoimmune disorder, a burdensome bowel problem or severe seizure disorder. As Hippocrates said: "let food be your medicine." As a neurologist, I found that with the proper application of dietary interventions one can treat neurological problems in a very impressive way. My first introduction to what I now call 'nutritional neurology' was as a fourth-year medical student in the mid-90s doing a rotation in pediatric neurology at Johns Hopkins Medical Center. I was introduced then to the ketogenic diet in the context of drug resistant epilepsy. I was shocked to see a diet could treat seizures in a manner that medications could not, which led to my lifelong interest in nutritional neurology.

Unfortunately, in the conventional medical paradigm, there is a strong bias in favor of pharmaceuticals and against nutrition. In working over many years with conditions such as autism where a child may have severe behavioral problems, cognitive and language deficits, seizures, gut and immune issues along with various other problems, one should be thinking of nutritional interventions more. There is increasing data and research to support this. In a paper published this year (*Nutrients.* March 2018), Adams et al addressed comprehensive nutritional and dietary intervention for autism spectrum disorder in a randomized, controlled 12-month trial. They found:

> …the positive results of this study suggest that a comprehensive nutritional and dietary intervention is effective at improving nutritional status, non-verbal IQ, autism symptoms, and other symptoms in most individuals with ASD. Parents reported that the vitamin/mineral supplements, essential fatty acids, and HGCSF diet were the most beneficial.

See Figure 1 presenting the different dietary interventions used and their efficacy. 'GFCFSF' stands for gluten-free/casein-free/soy-free diet. As you can see, vitamins/minerals and essential fatty acids (EFA) were the most efficacious followed by the GFCFSF diet. Indeed, the right dietary supplement, aided when necessary with the right pharmaceutical-grade dietary supplement or medical food product, is a powerful, safe, and effective tool.

An integrative approach – from pharmaceutical to nutraceutical to electroceutical and neuromodulation interventions – is the third part of our approach. When medications fail, and even dietary supplements are not getting the job done, one should not give up. There are other modalities that can be used. Rehabilitative therapies can be very useful (e.g. PT, OT or other areas such as developmental optometry, Feldenkrais, MNRI, etc.), but other modalities also exist. Electronic stimulation of the body (electroceutical treatment) can be of great use and complement other treatments. In the case of the brain, based on the principle of neuroplasticity and aberrant neural networks, interventions known as 'neuromodulation' can be very safe and effective. My personal definition of neuromodulation is the positive alteration of neuronal activity (brainwave, electrical, neurotransmitter) via the strategic delivery of several stimuli to brain or nervous system regions that include among other things: electrical, magnetic, electro-magnetic, sound, and light. There are various examples such as transcranial direct current stimulation (tDCS), transcranial magnetic stimulation (TMS), vagal nerve stimulation, photobiomodulation, and many more.

In summary, having the right tools, a rationale and systematic plan of attack, respect for the element of time and proper timing, and proper attitude to health care can help demystify even the toughest health and medical problems. It is important to have an individualized approach. (Publilius Syrus, the Roman writer previously quoted above, wrote: "You cannot put the same shoe on every foot.") Doing otherwise will not be effective in complex, chronic cases.

References

Abramowitz J, et al. Scrupulosity: A cognitive–behavioral analysis and implications for treatment. *Journal of Obsessive-Compulsive and Related Disorders.* 2014;3:140–149.

Adams JB, et al. Comprehensive Nutritional and Dietary Intervention for Autism Spectrum Disorder – A Randomized, Controlled 12-Month Trial. *Nutrients*. 2018;10 (3):369.

Chez MG, Guido-Estrada N. Immune therapy in autism: historical experience and future directions with immunomodulatory therapy. *Neurotherapeutics*. 2010, 7 (3): 293-301.

Corbier Jean-Ronel. *From Autism to Alzheimer's and Everything in Between: How to Fix the Brain Using the Restoration Model*. Babypie Publishing. May 12, 2017.

Corbier, Jean-Ronel. *Optimal Treatment for Children with Autism and Other Neuropsychiatric Conditions*. iUniverse, Inc. March 14, 2005.

Davidson RJ, et al. Alterations in Brain and Immune Function Produced by Mindfulness Meditation. *Psychosomatic Medicine*. July 2003;65(4):564–570.

Engel GL. The need for a new medical model: a challenge for biomedicine. *Science*. 1977; 196:129-136.

Engel GL. The clinical application of the biopsychosocial model. *Am J Psychiatry*. 1980; 137:535-544.

Naviaux RK. Metabolic features of the cell danger response. *Mitochondrion*. 2014 May;16:7-17.

Osler, William. Aequanimitas With Other Addresses To Medical Students, Nurses And Practitioners of Medicine.

Powell ND. Social stress up-regulates inflammatory gene expression in the leukocyte transcriptome via β-adrenergic induction of myelopoiesis. *PNAS.* October 8, 2013;110(41):16574-79.

Shaw W. Elevated Urinary Glyphosate and Clostridia Metabolites With Altered Dopamine Metabolism in Triplets With Autistic Spectrum Disorder or Suspected Seizure Disorder: A Case Study. *Integr Med* (Encinitas). 2017 Feb; 16(1): 50–57.

Sheridan JF, et al. Psychoneuroimmunology: stress effects on pathogenesis and immunity during infection. *Clin Microbiol Rev*. 1994 Apr; 7(2): 200–212.

Wegiel J, et al. The neuropathology of autism: defects of neurogenesis and neuronal migration, and dysplastic changes. *Acta Neuropathol.* 2010 Jun;119(6):755-70.

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Dr. Corbier is founder and chair of a nonprofit organization, *Brain Restoration Ministries* (see www.brainrestorationministries.com). This NPO provides free clinical care to indigent patients and supports innovative neurological research.

For more information about Dr. Corbier and his practice, go to www.brainrestorationclinic.com.

On the cover

The Craving Cure: The Nutritional Solution to Our Worldwide Dietary Crisis

by Julia Ross

Many of those coming to us for dietary help find it difficult or impossible to follow our suggestions because of their overpowering cravings. In fact, cravings for toxic, ultra-processed, nutrient-void foods have now precipitated a world-wide public health crisis.

- 80 percent of the US population is now overweight, and our *obesity* rate has reached *almost 50 percent*.[1] The US obesity growth rate, for decades the world's fastest and still rising, has recently been exceeded by those of many, mostly third world, nations who have "adopted" our diet.[2]
- Fifty percent of US adults have now been formally diagnosed with some form of Type 2 diabetes.[3] Galloping diabetes rates in many countries throughout the world now equal or exceed our own. In China, the rate is now *70 percent*.[4]
- A large international study, published in 2018, found that ultra-processed food intake is linked to increasing cancer rates – to a 12% greater risk of breast cancer, specifically.[5]

Unfortunately, such fearsome realities have had little impact on the world's eating habits. Our cravings for "highly palatable," foods outweigh our common sense, our vanity, and even our most powerful survival instincts. The problem is not that we're mindless, misinformed, or undisciplined. The problem is that our brain is constantly being exposed to the most addictive substances ever known.

The building scientific consensus is that most of us have actually become full-fledged food *addicts*. This conclusion is supported by almost 40 years of neuroscientific research confirming that the effects of sugars and other ultra-processed foods on the brain's pleasure centers are identical to those of drugs like cocaine and heroin. Neuroscientist Nora Volkow, PhD, chief of the National Institute on Drug Abuse (NIDA), has estimated that as much as 60 percent of the US adult population is helplessly dependent on edible narcotics.[6]

These highly compelling, brain-active substances include the following:

- The new high fructose, corn, agave, and fruit syrups;
- Granulated sugar from cane and beet;
- Damaged fats and salt;
- Gluten-containing and gluten-free starches;
- Chocolate, and
- Cannabis.

The biochemical cravings set off by products that combine these substances come in all sizes and strengths. Some cravers complain about visions of chocolate that linger for hours until they finally succumb. Others suffer unstoppable drive-to-the-store-and-eat-it-all-in-the-car-now compulsions. The brain's ancient system of appetite-control is no match for the now-constant assault of foods that are carefully designed to disable it.

A Brain-Based Cure for a Brain-Based Dietary Emergency

In the 1980s and 1990s, veteran researcher Kenneth Blum, PhD, a colleague of NIDA's Dr. Volkow, published several clinical studies demonstrating the positive effects of certain brain-targeted free-form amino acid supplements on the cravings (and negative mood states) that propel addictions of all kinds.[7] These studies prompted me and a number of other US addiction treatment professionals to try adding this nutritional strategy to our existing (and floundering) psycho-spiritual programs. We quickly found them to be stunningly successful and have continued to promote them through an organization called The Alliance for Addiction Solutions (https://www.allianceforaddictionsolutions.org).

As the director of integrative outpatient eating disorder and addiction treatment programs in the San Francisco Bay Area since 1980, I can attest to the remarkable, almost unfailing benefits of brain-targeted amino acid therapy in thousands of cases of food addiction alone.

The Five Brain-Targets of Addictive Substances Like Ice Cream, Cookies, and Soda

My clinic's work has confirmed Dr. Blum's premise that five specific brain functions, when repeatedly exposed to addictive substances, begin generating aberrant symptoms including negative moods and overwhelming cravings. The five brain functions:

- The neurotransmitter serotonin, our natural anti-depressant;
- The pleasurable endorphins, our natural pain-killing neurotransmitters;
- The neurotransmitter GABA, our natural tranquilizer;
- The neurotransmitter dopamine, our natural caffeine providing stimulation and reward;
- The blood glucose supply that supports all brain activity.

Identifying Which Brain Functions Need Amino Acid Support

Each of these five appetite-regulating brain functions, when disrupted and depleted of their particular amino acid precursors by repeated dietary assault, expresses a unique set of deficiency symptoms. My clinic has compiled these five sets of symptoms into a single assessment questionnaire scored on a 0-10 scale. The scores on this Craving Type Questionnaire (https://www.juliarosscures.com/craving-cure/) identify, at a glance, which brain functions are depleted and indicates which amino acids are needed to restore them.

The five brain functions are each dependent on specific amino acids. This well-established fact of brain biology was the impetus for Dr. Blum's original clinical studies. Our clinic has found, over the past 30 years, that providing the depleted amino acids as individual free-form supplements quickly and thoroughly silences cravings for drug-like foods. This freedom from craving allows a brain- and body-restorative diet to be adopted (and enjoyed!) After three to twelve months, the aminos may be discontinued as long as a diet rich in amino acids and other nutrients is sustained.

My staff nutritionists, together with other health professionals who also provide brain-targeted amino acid therapy, have, over the years, developed increasingly effective protocols. In the process, we have confirmed that the following amino acids can reliably be used to eliminate all five types of addictive craving:

1. Tryptophan or 5-HTP (5-hydroxy-tryptophan) convert to serotonin.
2. DPA (d-phenylalanine) or DLPA (dl-phenylalanine) raise endorphin levels (making them both so helpful in recovery from addiction to opiate drugs as well as to opioid foods).
3. Tyrosine or phenylalanine convert to dopamine and norepinephrine.
4. GABA or theanine raise GABA levels.
5. Glutamine can almost instantly stabilize the brain's vital glucose levels.

Assessing for Contraindications to Individual Amino Acids

Most of our clients have received immediate benefits from the use of amino acid supplements indicated by their Craving Type Questionnaire scores. But some clients are *not* good candidates for certain amino acid supplements. Possible contraindications to the amino acids listed above are clearly laid out in *The Craving Cure's* "Cracking the Craving Code" section, which is the clinical core of the book.

With sensitive trialing and dosing, most of these potentially contraindicated conditions pose no problems at all. But some, such as melanoma or mania, rule out the use of certain individual aminos (in these cases tyrosine and glutamine respectively). With some conditions, however, no individual amino concentrates *at all* may be used. Our pregnant and nursing clients, for example, typically benefit safely, instead, from raising dietary levels of amino-rich animal protein and from taking a *complete free-form amino blend*, like *Total Amino Solution*.

Note: Those who know themselves to be generally intolerant of nutrient supplements rarely tolerate *any* aminos well. ➤

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Amino Trialing

In 1996, my clinic began adding formal in-office and, more recently, Skype amino trialing to our standard assessment and dosing process. We have since conducted over 20,000 individual amino trials. Positive reactions to a low starting dose (a single capsule of the lowest standard dose available) have typically been observable within minutes and vastly improve treatment compliance. When there is no response, a second dose is trialed.

If any negative effect is experienced during an amino trial, an oral dose of 1,000-2,000 mg of vitamin C powder in 4 ounces of water typically eliminates it in minutes. Note: Trialing Kits can be ordered on cravingcure.com.

Lab Testing for Neurotransmitter Levels

In some cases, we have asked for blood platelet testing, the equivalent of cerebrospinal fluid testing (through Health Diagnostic in New Jersey). We've also asked for more widely available, but somewhat less accurate, blood plasma testing, to confirm symptom questionnaire results. We have *not* found urine testing to be clinically reliable. Its results often contradict clear cut symptoms and the aminos prescribed by lab personnel often have either no effect or harmful effects, in consequence. This has understandably confused and discouraged many eager amino acid therapy practitioners and their patients.

The Amino Acids in Action

I wrote *The Craving Cure*'s "Cracking the Craving Code" amino acid therapy section with clinicians in mind. It's broken down into two chapters: 1) general instructions for all five Craving Types and 2) very detailed instructions for treating *each* Craving Type. Here, I'll give a case example in which two amino acids were trialed and successfully used. I'll follow that with some clinical tips on how to use the other amino acids that are needed for eliminating the remaining three Craving Types.

Phil's Story

Phil was a food craver who had switched from alcoholic drinking to donut and ice cream administration years before, with resulting weight-gain problems and a diagnosis of pre-diabetes. He'd been a martial arts master who'd had many injuries and lots of pain over the years. His Craving Cure Questionnaire scores clearly indicated that his endorphin function was weak. He was on the hyper side, so he found slightly stimulating DLPA, even in a single-capsule trial dose, a bit too "buzzy." After we neutralized his reaction with 1,000 mg of vitamin-C powder, we trialed him on one capsule of DPA. A few minutes later, he took a deep breath and said, "For the first time in months, the pain isn't there." After a week on two DPA capsules, mid-morning and two DPA mid-afternoon and evening, we asked if his need for sweets had diminished. He answered, "I've actually almost forgotten about them. I don't even *think* about my nightly ice cream sundae ritual anymore!" After three months, he dropped down to one DPA twice a day, successfully. After he'd been able to improve his diet for a solid six months, he found that he no longer needed his DPA supplements, at all.

Re Phil's Diet: We've found that all low-endorphin "comfort cravers" must be especially careful to eat plenty of complete protein i.e. protein containing all 20 total aminos acids, in generous quantity in early "recovery." At least 4 oz. (or more for males) of cooked turkey, lamb, or equivalent, preferably animal source, protein per meal, particularly at first). That's because endorphin building requires up to 19 different aminos. In contrast, serotonin and dopamine production each require only one amino acid (tryptophan and tyrosine, respectively).

Identifying Phil's Endorphin Deficiency

This is an abbreviated list of endorphin deficiency symptoms from my book, *The Craving Cure.* On the 0-10 symptom severity scale, Phil scored 7-10 on every symptom. This was his primary Craving Type.

- "Love" chocolate or doughy, fried, creamy foods.
- Crave substances or behaviors that give pleasure, comfort, reward, or numbing.
- Are very sensitive to emotional or physical pain.
- Cry or tear up easily.
- Have a history of chronic physical pain or chronic feelings of sadness or loneliness.

Find the complete *Craving Type Symptom Questionnaire* in *The Craving Cure* or at *cravingcure.com*. Our clinic has verified its symptoms through 30 years of clinical experience including over 20,000 individual amino acid trials conducted since 1996.

Those who, like Phil, are low in endorphins are missing out on the enjoyment in life that should be naturally supplied by their internal pleasure-promoters. Though most of our food-craving clients have high scores in more than one deficiency category, their endorphin deficiency scores are typically the highest at all.

As *endogenous opiates*, the endorphins can quickly erase discomfort and pain, whether physical or emotional. These inner narcotics come in several forms. One of the three potent endorphin subtypes is called enkephalin. A heavily

funded scientific study on the brain-effects of M&M's, the number one candy consumed in America, found that this chocolate and sugar bomb caused enkephalin activity to increase by 150 percent. The study found this effect on the brain to be comparable to that of the drug opium.[8]

When we cannot generate adequate amounts of our own enkephalin or other endorphins, we seek external help to restore our sense of well-being, however briefly, from:

- Chocolate and sugar;
- Wheat's gliadin content (also known as gluteo*morphin*) and the milk protein casein (also known as caso*morphin*);
- Coffee, cannabis, alcohol, and certain behaviors (e.g. over-exercise, porn);
- Fat and salt have milder opioid effects.

Consuming products that combine all of these, and other, endorphin-stimulating substances can generate cravings that literally overpower the brain. This is why, though techniques like mindfulness can modestly raise endorphin levels and reduce "reward-driven" eating temporarily,[9] for most, they are no match for the food industry's bliss point technology. Fortunately, this lack can be quickly remedied with the help of an unusual amino acid called d-phenylalanine (DPA).

Amino Relief for "Comfort Cravers"

DPA has been particularly well researched thanks to an indefatigable pharmacology professor at Chicago Medical School, Seymour Ehrenpries, PhD. Amino acid supplements come in two forms, an L- and a D-form. Typically, only the L-form can be beneficial, but Dr. Ehrenpries (and other researchers) found that the D-form of phenylalanine slowed down the rate of destruction of endorphin by endorphinase enzymes, dramatically increased endorphin availability, and reduced the need for morphine among post-surgery patients, *with no adverse effects*.[10]

D-phenylalanine (DPA) is available in two forms:

1) Full strength (500 mg) capsules. People who tend to be anxious, hyper, or agitated, or who need comfort at night, especially love its easing effects. It is also the most potent option when physical pain is a problem.
2) DLPA contains both the D- (250 mg) the L- (250 mg) forms of phenylalanine. Its two-amino content works best for Comfort Cravers who are fatigued, because L-phenylalanine is somewhat energizing (as it converts in part to tyrosine) as well as being an essential component of the endorphin subtype, enkephalin. ➤

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Occasionally a combination of both forms works best (for example, DLPA during the day and DPA at night). Whichever amino is used, one to three capsules, taken two to three times a day, is the standard dose.

Note: All of the aminos mentioned in this article are available in IV, as well as oral preparations. The former can help with early alcohol and drug addiction recovery (in addition to oral aminos) but are not needed for food addiction recovery.

Phil's Secondary Amino Acid Need

Phil's questionnaire's second hyper-elevated score indicated significant hypoglycemia and his pre-diabetes diagnosis also indicated that he urgently needed blood sugar- and insulin-regulating help. That help was provided by the amazing amino acid, glutamine,[11,12] which quickly eliminated his frequent blood-sugar crashes and the cravings they incited. It also helped to restore optimal insulin function as this much researched amino has been proven to do. The dose: three capsules, three times a day (AM, mid-morning, mid-afternoon). Glutamine certainly added to his ability to stick with his new high protein, low-glycemic, healthy fat diet, which steadily lowered his HA1C to normal over six-months.

Contraindications*:* Glutamine should not be taken when mania has been a problem as it converts to glutamate. Interestingly, it can help with bi-polar depression, probably for the same reason. Dosing must be very careful, however, to avoid triggering mania.

Three Other Amino Acids That Can Eliminate Food Cravings (and Negative Moods)

Now that I've illustrated the use of the above two anti-craving amino acids, I'll briefly mention the three others whose clinical usefulness can be so profound. See *The Craving Cure* for an entire chapter on each of the five anti-craving amino acids.

Tips on Using Tryptophan or 5-HTP to Raise Levels of Serotonin, Our Natural Anti-Depressant and Appetite Regulator

The benefits of these two aminos on mood and sleep are well-know. Their effects on cravings for refined food and other addictive substances are less so. We've found that about 80% of those with serotonin deficiency do equally well on tryptophan and 5-HTP. We prefer tryptophan with young children (it's more nutritious) and with those who are more agitated and/or sleepless (5-HTP can raise the levels of the stimulating stress-response hormone cortisol too high in those whose levels may already be somewhat elevated.)

Serotonin levels naturally drop after noon, which is why those with low-serotonin-caused carb cravings and low moods feel worst in the afternoon and evening. Consequently, we typically dose these clients in the mid-afternoon and evening (with an extra dose, if needed for sleep, at bedtime, or sometimes, in the mid-morning).

Contraindications: 1) Taking any serotonin-targeted meds regularly (e.g. SSRIs, Imitrex) at the same time of day (or at all with more than one such drug). 2) A carcinoid tumor.

Myth Busting: Does 5-HTP or tryptophan always have to be given with tyrosine in a rigid ratio? We have found that these two aminos do ***not*** need to be taken at the same time as, and in a specific ratio to, tyrosine. In fact, they should usually be taken separately, and deficiency symptoms should be used to determine individual dosing needs. 5-HTP and tryptophan are mostly needed later in the day, while tyrosine, our natural caffeine, is most needed in the morning (as you'll see below).

If initial assessment indicates that any one of these aminos is *not* needed, it should be left out altogether. It can always be added later, if symptoms change. At our clinic, our clients fill out weekly self-scoring deficiency symptom mini-questionnaires, to guide treatment till it is completed.

Tips on Using Stimulating L-Tyrosine (or L-phenylalanine) to Raise Dopamine and Norepinephrine Levels

Most of our fatigued teen and adult clients prefer to use tyrosine to improve physical and mental energy and focus and to stop their cravings for the caffeinated sodas (including damaging diet and energy drinks) and Starbuck's lattes; the chocolate; or the pure sugar candy they've been using to boost their flagging vitality and concentration.

Children and sensitive or easily agitated adults tend to do better on the milder L-phenylalanine,[13] only part of which is converted into L-tyrosine, the direct dopamine precursor. (Dopamine is then converted in part to norepinephrine and adrenaline.) *Note: Tyrosine also provides fail-proof caffeine detox aid!*

Dosing: Children and sensitive adults: 250 – 500 mg L-phenylalanine, as needed.

Other teens and adults: 500 mg or more, in 500 mg increments (up to 2,000 mg per dose).

Dosing Time: AM and mid-morning. If needed, they can also be taken in the mid-afternoon if they do not interfere with sleep.

Contraindications: Though, with careful dosing, these two aminos seldom cause actual problems for our clients, there are more *possible* contraindications to the use of tyrosine and phenylalanine (e.g. headaches or elevated blood pressure) then to any of the other aminos. (See the specific possible contraindications for each amino in *The Craving Cure's* Chapter 12.)

Tips for Using GABA or Thianine to Neutralize Stress Chemistry and Stop "Stress Eating"

Myth busting: Our clinic's clients' phenomenal responses to GABA supplementation over the past 30-years contradict a widely circulated, but mistaken, conviction that GABA (both an amino acid and a neurotransmitter) *cannot* cross the blood brain barrier and can therefore not effectively raise calming GABA levels in the brain. Research confirms that GABA actually *can* cross the blood-brain-barrier.[14] In practice, we observe that most of our clients get a stronger effect from a little GABA than they get from much higher doses of the other aminos; 125 mg is our starting dose (versus 500 mg of most other aminos), and many clients stick with that dose. Some need to go up to 250 mg; a few need (1-3) 500 mg capsules to get the same results. (We have not liked the effects of 750 mg GABA products.)

Dosing: Take GABA two to three times a day, as clients' particular stress and craving symptoms warrant.

Contraindications: At too high a dose, GABA can lower blood pressure or cause agitation.

How Long Are the Aminos Needed?

Children's Needs: A few weeks or months.

Teens and adults: Typically, a few months to a year. More than a year if there is genetic neurotransmitter dysregulation (e.g. family history of alcohol or drug addiction).

References

1. Fryar CD, Carroll MD, Ogden CL. Prevalence of Overweight, Obesity, and Extreme Obesity Among Adults: United States, Trends 1960-1962 Through 2009-2010. CDC. September 2012.
2. The GBD 2015 Obesity Collaborators. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *N Engl J Med*. 2017; 377:13-27.
3. CDC. *Long-term Trends in Diabetes.* April 2016. http://www.cdc.gov/diabetes/data.
4. Chan M. Obesity and diabetes: the slow-motion disaster. Keynote address at the 47th meeting of the National Academy of Medicine. WHO. October 17, 2016.
5. Fiolet T, et al. Consumption of ultra-processed foods and cancer risk. *BMJ.* 2018;360:k322.
6. Volkow ND, Baler RD. NOW vs LATER brain circuits: implications for obesity and addiction. *Trends in Neuroscience*. 2015;38(6):345-52.
7. "*In the 1980s and 1990s, veteran researcher Kenneth Blum, Ph.D., a colleague of NIDA's Dr. Volkow, published several clinical studies including the following two:"* Blum K, et al. Reduction of both drug hunger and withdrawal against advice rate of cocaine abusers in a 30 day inpatient treatment program by the neuronutrient Tropamine. *Current Therapeutic Research.* 1988; 43(6):1204-1214. Blum K, et al. Clinical evidence for effectiveness of Phencal in maintaining weight loss in an open-label, controlled, 2-year study. *Current Therapeutic Research.* 1997;58(10).
8. DiFeliceantonio AG, et al. Enkephalin Surges in Dorsal Neostriatum as a Signal to Eat. *Current Biology*. October 23, 2012; 22(20) :1918–1924.
9. Mason AE, et al. Reduced reward-driven eating accounts for the impact of a mindfulness-based diet and exercise intervention on weight loss: Data from the SHINE randomized controlled trial. *Appetite*. 2016 May 1;100:86-93.
10. Ehrenpreis S. Pharmacology of enkephalins inhibitors: animal and human studies. *Acupuncture & Electro-Therapeutics Research*. 1985;10 (3): 203-208.
11. Laviano A, et al. Glutamine supplementation favors weight loss in nondieting obese female patients. A pilot study. *European Journal of Clinical Nutrition*. 2014;68(11):1264-1266.
12. Molfino A, et al. Metabolic effects of glutamine on insulin sensitivity. *Nutritional Therapy & Metabolism.* 2010; 28 (1): 7-11.
13. Alamshah A, et al. l-Phenylalanine Modulates Gut Hormone Release and Glucose Tolerance, and Suppresses Food Intake Through the Calcium-Sensing Receptor. *Int J Obes.* 2017;41 (11): 1693-1701.
14. Boonstra ER, et al. Neurotransmitters as food supplements: the effects of GABA on brain and behavior. *Frontiers in Psychology.* 2015;6: 1520.

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Underappreciated Risks in Pain Management

by Robert Gorter, MD, PhD

Hidden Hazards: Over-the-Counter Painkillers

A recent study published in the *British Medical Journal (BMJ)* revealed that certain commonly recommended over-the-counter, non-steroidal anti-inflammatory drugs (NSAIDs), utilized as painkillers, can significantly increase the odds of heart attack.[1] This can occur within a month (or less) if high doses are ingested. To carry out the study, a team of researchers pooled data from various healthcare databases in countries that included Canada, Finland, and the UK with a total cohort population of nearly 447,000 participants. More than 61,000 of these patients had suffered a heart attack (myocardial infarction). The research team found that use of painkillers was associated with increased risk of heart attack, and more than 90% of the painkillers assessed were associated with that increased risk. Researchers also found that overall risk of heart attack was 20% to 50% higher in NSAID users than non-users. The experts noted that risk varied greatly.

Using ibuprofen or similar drugs at elevated levels for extended periods of time was associated with a 75% higher risk of heart attack, while rofecoxib correlated with greater than 100% increased risk. The research team noted that the risk of a cardiovascular event becomes elevated within a week and persists with longer use and higher doses.

Nonsteroidal anti-inflammatory drugs (NSAIDs) includes medications that provide analgesic and antipyretic effects, and, at higher doses, anti-inflammatory effects. Usually, these medications can be acquired over the counter (OTC), and no prescription is obligatory. Overdosing on NSAIDs is dangerously easy. By way of example, a single caplet of ibuprofen is available in a standard dosage of 200 mg. Yet consuming more than six of these caplets within 24 hours for over a month is accompanied by increased heart attack risk. Without knowledge of this risk, patients could exceed safe thresholds (which vary widely from one drug to the next). It is important to remember that with almost any medication some people will be more sensitive than others, given their health history, genetic detoxification capacity, and current liver status. Risks also increase during pregnancy, in childhood, and with aging.

Dr. Michèle Bally, researcher at the University of Montreal Hospital Research Centre, and colleagues wrote: "Given that the onset of risk of acute myocardial infarction (heart attack) occurred in the first week and appeared greatest in the first month of treatment with higher doses, prescribers should consider weighing the risks and benefits of NSAIDs before instituting treatment, particularly at higher doses."[1]

Previous studies had also reported that painkillers raise the odds of heart attack. A team of researchers from the University of Bern (Switzerland) analyzed 31 clinical studies with a total cohort population of more than 116,000 patients.[2] According to the analysis, patients who took rofecoxib and lumiracoxib were twice as likely to suffer heart attack compared with those who took a placebo. The researchers also found that ibuprofen was associated with a *threefold increased* risk of stroke. In addition, the experts noted that patients who took etoricoxib and diclofenac were up to *four times* as likely to die of heart attack or stroke.

Another study published in the *European Heart Journal* showed that commonly used painkillers were associated increased likelihood of cardiac arrest. According to a team of researchers at the University of Copenhagen, ibuprofen can raise the odds of cardiac arrest by 31%.[3] The experts also noted that diclofenac was tied to a 50% higher risk of cardiac arrest. In 2015, the US Food and Drug Administration (FDA) issued strong warning labels against painkiller use, after mounting evidence showed that the drugs may indeed increase the risk of heart attack, liver damage, and kidney failure.

Painkillers and the Risk of Liver Failure.

Acute paracetamol (acetaminophen, Tylenol®) toxicity can be caused when the recommended dose of three grams

Medications and Dosages Associated with Increased Risk for a Cardiovascular Event

Celecoxib (Celebrex®) > 200 mg
Diclofenac (Voltaren®, Cambia®, Solaraze®) > 100 mg
Ibuprofen (Advil®) > 1200 mg
Naproxen (Midol®, Aleve®, Naprelan®) > 750 mg
Paracetamol (Tylenol®) > 3 gram

per day is doubled to more than six grams daily. When patients ingest 6 grams per day or more over several weeks to months, they are at risk for toxicity and liver failure.[4] Most people with paracetamol toxicity have no symptoms in the first 24 hours following overdose. Others may initially have nonspecific complaints such as vague abdominal pain and nausea. With time, signs of liver injury may develop, such as low blood sugar, low blood pH, a tendency to bleed easily, and eventually hepatic encephalopathy (hepatic coma which can lead to death). Drug-induced liver damage (hepatotoxicity) results from decreases in the liver's natural antioxidant glutathione and directly damages cells in the liver, leading to liver failure, usually requiring liver transplantation. Some cases will spontaneously resolve. However, in the US, the UK, and the EU, ibuprofen toxicity is the most common cause of acute liver failure and worldwide, one of the most common causes of poisoning.

The most prominent members of this group of drugs are aspirin, ibuprofen, diclofenac (Voltaren®) and naproxen (Aleve®, Midol®); all available over the counter in most countries. Paracetamol (acetaminophen, Tylenol®) is generally not considered an NSAID because it has little anti-inflammatory activity. Most NSAIDs inhibit the activity of COX-1 and COX-2 pathways, which produce analgesic and anti-inflammatory effects. However, chronic use of NSAIDs, particularly aspirin, can cause gastrointestinal bleeding and ulcers.

In my experience, *Cannabis sativa* exhibits all the beneficial effects of the NSAIDs and inhibits COX-1 and COX-2 pathways specifically, but without any of the toxicities documented here.

The Fine Print: Side Effects of Prescription Pain Medications

According to the US Institute of Medicine, "All of the currently available analgesic (pain-relieving) drugs have limited efficacy for some types of pain. Some are limited by dose-related side effects and some by the development of tolerance or dependence."[5]

Opioid analgesics commonly used to combat pain include codeine (Dolacet®, Hydrocet®, Lorcet®, Lortab®); morphine (Avinza®, Oramorph®); oxycodone (Vicodin®, Oxycontin®, Roxicodone®, Percocet®, Roxicet®); propoxyphene (Darvon®, Darvocet®) and tramadol (Ultram®, Ultracet®). These medicines can cause psychological and physical dependence, as well as constipation, dizziness, lightheadedness, mood changes, nausea, sedation, shortness of breath, or vomiting. Taken in high doses or mixed with alcohol, analgesics can slow breathing, a potentially fatal condition.

In my experience, *Cannabis sativa* exhibits all the beneficial effects of the NSAIDs and inhibits COX-1 and COX-2 pathways specifically, but without any of the toxicities documented here.

Patients in pain are frequently also prescribed muscle relaxants such as Robaxin® and Flexeril®; anti-anxiety agents such as Valium®, Sinequan®, Vistaril®, Ativan®, and Xanax®; hypnotics such as Halcion®, Restoril®, Chloralhydrate®, Dalmane®, and Doral®; and anti-emetics such as Zofran®, Compazine®, Phenergan®, Tigan®, and Marinol®.

Anzemet®, Kytril, and Zofran®, newer anti-emetics, are serotonin antagonists, blocking the neurotransmitter that sends a vomiting signal to the brain. Rare side effects of these drugs include fever, fatigue, bone pain, muscle aches, constipation, loss of appetite, inflammation of the pancreas, changes in electrical activity of heart, vivid dreams, sleep problems, confusion, anxiety, and facial swelling.

Ativan® and Xanax®, benzodiazepine drugs, are prescribed to combat the anxiety associated with chronic pain. Ativan can cause amnesia. Abruptly stopping the drug can cause anxiety, dizziness, nausea and vomiting, and fatigue. It can cause drowsiness, confusion, weakness, and headache when initially starting the drug. Nausea, vomiting, dry mouth, changes in heart rate and blood pressure and palpitations are possible side effects.

Benadryl®, an antihistamine, is given along with Reglan®, Haldol®, Inapsine®, Compazine®, and Torecan® to counter side effects of restlessness, tongue protrusion, and involuntary movements. Its side effects include sedation, drowsiness, dry mouth, dizziness, confusion, excitability, paranoia, and decreased blood pressure.

Compazine® and Torecan® are phenothiazines, the first major anti-nausea drugs. Both have tranquilizing effects. Common side effects include dry mouth and constipation. Less common effects are blurred vision, restlessness, involuntary muscle movements, tremors, increased appetite, weight gain, increased heart rate, and changes in electrical activity of heart. Rare side effects include jaundice, rash, hives, and increased sensitivity to sunlight.

Flexeril® is a frequently prescribed muscle relaxant that can cause abnormal heartbeat (arrhythmia), aggressive behavior, agitation, anxiety, bloated feeling, blurred vision, confusion, constipation, convulsions, decreased appetite, depressed mood, diarrhea, difficulty falling asleep or staying asleep, difficulty speaking, disorientation, double vision, excitement, fainting, fatigue, fluid retention, gas, hallucinations, headache, heartburn, hepatitis, hives, increased heart rate, indigestion, inflammation of the stomach, itching, lack of coordination, liver diseases, loss of sense of taste, low blood pressure, muscle twitching, nausea, nervousness, palpitations, paranoia, rash, ringing in the ears, severe allergic reaction, stomach and intestinal pain, sweating, swelling of the tongue or face, thirst, tingling in hands or feet, tremors, unpleasant taste in the mouth, urinating more or less than usual, vague feeling of bodily discomfort, vertigo, vomiting, weakness, or yellow eyes and skin.

Haldol® and Inapsine® are tranquilizers that block messages to the part of the brain responsible for nausea and vomiting. Possible side effects

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include decreased breathing rate, increased heart rate, decrease in blood pressure when changing position and, rarely, change in electrical activity of the heart.

Reglan®, a substituted benzamide, increases emptying of the stomach, thus decreasing the chance of developing nausea and vomiting due to food remaining in the stomach. When given at high doses, it blocks the messages to the part of the brain responsible for nausea and vomiting. Side effects include sleepiness, restlessness, diarrhea, and dry mouth. Rarer side effects are rash, hives, and decreased blood pressure.

Robaxin® is reported to have side effects that include abnormal taste, amnesia, blurred vision, confusion, dizziness, drop in blood pressure and fainting, drowsiness, fever, flushing, headache, hives, indigestion, insomnia, itching, light-headedness, nasal congestion, nausea, pinkeye, poor coordination, rash, seizures, slowed heartbeat, uncontrolled eye movement, vertigo, vomiting and yellow eyes and skin.

Cannabis Efficacy

Cannabis sativa (THC and CBD) exhibits significant pain release by blocking the nerve pathways (COX-1 and COX-2) which form the basis of common pain reactions.[6] Chronic inflammation in particular usually dissipates rapidly, and pain is reduced or resolved. *Cannabis sativa* has no known toxicities other than possible sleepiness when one first initiates therapy or when consuming too much. Opioids and NSAIDs have significant side effects, including increasing risk of heart attack if a high dosage is taken daily.

Cannabis has been used for millennia and has been shown to be an effective medication for almost any form of pain or insomnia. An important property of *Cannabis sativa* is that it does not alter the cycles of REM sleep which add to overall relaxation during sleep, improve anabolic processes (tissue repair), and restore or maintain circadian rhythm. In cases of pain, when standard pain medications are not sufficient, cannabis can be an effective alternative or complement to pain management. Small amounts of *Cannabis sativa* (THC and CBD) added to opioids may diminish the need for opioids by 50% to 70%, which is especially crucial in palliative care.

My clinical experience over the last 45 years treating AIDS and cancer patients has confirmed the synergistic effects between cannabis and opioids. In combination, low doses of *Cannabis sativa* (or dronabinol) paired with low doses of opioids are effective for longer periods of time with fewer side effects, clearly benefitting many patients in pain.

References

1 Bally M, et al. Risk of acute myocardial infarction with NSAIDs in real world use: bayesian meta-analysis of individual patient data. *BMJ* 2017;357:j1909.

2. da Costa B, et al. Effectiveness of non-steroidal anti-inflammatory drugs for the treatment of pain in knee and hip osteoarthritis: a network meta-analysis. *Lancet*. 2016;17:03.

3. Sondergaard KB, Gislason G. NSAIDS and cardiac arrest: Non-steroidal anti-inflammatory drug use is associated with increased risk of out-of-hospital Cardiac Arrest: A nationwide Case-Time-Control study. *European Heart Study.* June 2017; 38(23): 1788-89.

4. Claridge LC. Acute liver failure after administration of paracetamol at the maximum recommended daily dose in adults. *BMJ* 2010;341:c6764.

5. Institute of Medicine. *Marijuana and Medicine: Assessing the Science Base*. Washington, DC: The National Academies Press. 1999.

6. Russo EB. Cannabinoids in the management of difficult to treat pain. *Ther Clin Risk Manag*. 2008 Feb;4(1):245–259.

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Robert Gorter, MD, PhD, holds degrees from the University of Amsterdam Medical School in the Netherlands, UCSF Medical School, and a PhD from the University of Witten/Herdecke in Germany. For approximately 10 years, he worked as a physician and researcher in the treatment of AIDS patients at UCSF. Those efforts provided the foundation for research and clinical practice in immunotherapy and the development of effective nontoxic cancer treatment, today known as the Gorter Model. This approach was applied at his treatment center, the Cologne Medical Center, in a teaching hospital in Germany, and at treatment centers he developed in Cairo, Egypt, and Istanbul, Turkey. He is coauthor of *Fighting Cancer: A Nontoxic Approach* from North Atlantic Press and a forthcoming book, *Cannabis as Medicine*.

Consulting Services. Dr. Gorter is available to physicians and patients to discuss the suitability and applications of cannabis medicine for a range of medical issues, based on his clinical experience working with thousands of patients with AIDS, cancer, and other serious health conditions. While he cannot give specific medical advice to individuals who are not his patient, he can speak to his experience with others who have dealt with similar conditions. Consultations with Dr. Gorter and colleagues can be schedule through his website: www.CannabisAsMedicine.eu

Cannabis in Pain Management

by Robert Gorter, MD, PhD

Robert Gorter earned his medical degree at the University of Amsterdam Medical School in the Netherlands in 1971. That year, Dr. Gorter set up the very first methadone detox and maintenance program on the European continent in Amsterdam. His experience in pain management deepened with his appointment as an attending physician and clinical and epidemiological researcher on HIV/AIDS at San Francisco General Hospital in the world-renowned Ward 86 at the height of the AIDS epidemic. When that unit became part of the AIDS program at the University of California, San Francisco School of Medicine, he became medical director of the Department of AIDS Epidemiology and Biostatistics and led that department for four years. Much of what we know today about the natural progression of HIV infection into AIDS comes from the seminal research with this initial cohort of patients, whose progress was tracked in long-term follow-up studies at UCSF.

Intrigued by the fact that a few of the patients with HIV infection never progressed to AIDS, Dr. Gorter identified these patients as "long-term, non-progressors." Approximately 80% of those long-term survivors reported that they used *Cannabis sativa* three times per week or more, primarily consuming it through inhalation. This raised the question of whether cannabis played a role in slowing the AIDS virus. Subsequently, Dr. Gorter became one of the first researchers to study and publish on the efficacy of dronabinol (generic THC) for HIV/AIDS and cancer patients.

Dr Gorter noted that most illnesses leading to the death of HIV-infected patients were malignancies. Thus, the destruction of the immune system caused by HIV seemed to correlate with an increase in various forms of cancer. A decade later, when Dr Gorter shifted the primary focus of his work to cancer treatment, he began developing clinical protocols, based on the principles of intensive and targeted immune restoration learned in the "War on AIDS." Dr Gorter has spent almost three decades since that time establishing and refining effective methodology for immune therapy, including the medical use of cannabis.

Today, North America and, to a certain extent, the EU, Canada, and Australia have been hit hard by the opioid epidemic. Prescriptions for opiates have increased 400% percent since 2000, and with this trend, a shocking increase in fatal overdoses has followed. Many also move on to heroin because it is cheaper, easier to obtain, and more potent. Every day, more than 100 Americans now die from prescription narcotic overdoses.[1]

Could cannabis be part of the solution? The latest data indicate progress in reducing opiate addiction in states that have legalized cannabis medicine. Where medical cannabis has been permitted in the US, Medicare Part D prescriptions for opioids fell by more than 2 million daily doses per year in a given state. Overall, prescriptions for opioids fell by 3.74 million daily doses per year once medical cannabis dispensaries opened.[2] A University of Michigan study published in the *Journal of Pain* (2016) reported that cannabis reduces the use of opioids on average by 64%.[3]

Cannabis has served as an analgesic for at least 5,000 years. Today, patients frequently report significant pain relief from cannabis, even in cases where conventional pain therapies have failed. The research community currently recognizes the potent benefits of cannabis for certain patients, including those attempting to cope with chronic pain conditions that include:

- Amyotrophic lateral sclerosis
- AIDS neuropathy
- Arthritis and other rheumatic and degenerative hip and joint disorders
- Cancer pain
- Central nervous system damage
- Diabetic neuropathy
- Dystonia
- Insomnia associated with chronic pain
- Migraine headaches
- Multiple sclerosis
- Neuro-invasive cancer (glioblastoma)
- Parkinson's disease
- Postoperative pain (as an opioid adjunct)
- Severe burns
- Spina bifida
- Spinal cord injury or lesions
- Stroke

Chronic pain is a major public health issue that is widespread across both the adult and aging populations of industrialized nations. Epidemiological statistics are alarming: In Europe, it is estimated that one in four adults has a chronic pain condition. In the US, at least 38 million adults suffer from chronic

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pain, and at least 12 million people have used cannabis as a treatment.

For patients in pain, the goal is to function as fully as possible by reducing pain as much as possible, while minimizing the often-debilitating side effects of pain therapies. Failure to adequately treat severe and/or chronic pain can have tragic consequences. Not infrequently, people in unrelieved pain are tempted to become suicidal. Despair can also cause patients to discontinue potentially life-saving procedures such as surgery, which themselves cause severe suffering. In such dire cases, anything that helps to alleviate the pain will prolong these patients' lives and improve their quality of life.

Researchers have found that the mechanism of analgesic action of cannabis involves both the body's own cannabinoid receptors and also direct action on the neurons that transmit pain.

Cannabis can serve at least five important roles in safe, effective pain management 1) by providing relief from the pain itself (either alone or in combination with other analgesics),[4] 2) used in combination with opioids, by reducing the amount of opioid required and therefore the risk of overdose, 3) reducing the risk of opioid addiction as well,[5] 4) controlling nausea, vomiting, and dizziness that can accompany severe, prolonged pain,[6] and 5) serving as an antiemetic for the nausea and vomiting that accompany opioid use.[7] Researchers have found that the mechanism of analgesic action of cannabis involves both the body's own cannabinoid receptors and also direct action on the neurons that transmit pain.

In my experience, the higher the dose of opioids, the greater the risk of overdose. These risks can be diminished significantly by combining cannabis with an opioid. The reduction in pain is great enough to reduce the need for opioids and therefore lower the risk of accidental death from an overdose.

Those who take cannabis by inhalation or orally report great relief if cannabis is added to standard pain management or taken as a substitute. It is our observation that patients with chronic pain need only approximately 30% of their typical opioid dosage when small quantities of THC are added to their regimen, usually 2.5 mg to 5.0 mg twice a day.

Cannabis as medicine is legal to recommend. Medical professionals have a legal right (and even a moral duty) to recommend cannabis as a treatment and to discuss treatment options with their patients. Medical professionals and individual patients should familiarize themselves with the applicable laws and regulations in their country and state. In states where cannabis is not legal, prescription medications derived from synthetic cannabis such as dronabinol provide a legal alternative.

Pain Research on Cannabis

A recent survey conducted in the US queried 2,400 patients regarding their medical use of cannabis. More than 80% of respondents reported finding CBD very effective. Over 66% of respondents reported that CBD is more effective than their prescribed medications, and 42% stated that they had replaced their prescribed medication with CBD. In terms of pain management, 54% of the respondents used CBD for joint pain, 35% for muscle tension with cluster headaches, and 32% for other forms of chronic pain.[8]

Between 1975 and 2009, more than 300 studies were conducted using medical cannabis as a pain analgesic, with the consistent finding that cannabinoids and *Cannabis sativa* can help patients experience significantly less pain. A 2009 review of these studies found that "nearly all of the 33 published controlled clinical trials conducted in the United States have shown significant and measurable benefits in subjects receiving the treatment." The US Society for Neuroscience has concluded that "substances similar to or derived from marijuana could benefit the more than 97 million Americans who experience some form of pain each year." The review's authors note that the more than 100 different cannabinoids in cannabis have the capacity for analgesia through neuromodulation in ascending and descending pain pathways, neuroprotection, and anti-inflammatory mechanisms.

Research on the therapeutic potential of cannabis and cannabinoids has expanded considerably in the past decade. The Center for Medicinal Cannabis Research, a state-funded $8.7-million research effort at University of California campuses, has completed 13 approved studies. Of those, seven published double-blind, placebo-controlled studies examined pain relief, and all the research found cannabis to be effective.[9] For example, a group study involving 50 patients with HIV-associated neuropathic pain found that smoking cannabis reduced pain by a mean of 34%. A reduction in pain was experienced by half (52%) of the patients utilizing cannabis. In a crossover trial (n = 24), dronabinol (up to 10 mg/day) reduced MS-related pain by one-third on average. Small controlled studies have indicated that cannabinoids may also be effective against chronic pain due to other causes (tumor pain, rheumatism, fibromyalgia, and migraines).

Neurological Pain

In the United Kingdom, Glaxo-Wellcome (GW) Pharmaceuticals has been conducting clinical trials for more than a decade with the company's form of cannabis medicine, Sativex® Oromucosal Spray, a controlled-dose whole-plant extract. GW's Phase II and Phase III clinical trials showed positive results for the relief of neurological pain related to AIDS neuropathy, ALS, cancer, central nervous system damage, dystonia, MS, migraines, Parkinson's disease, peripheral neuropathy, spina bifida, spinal cord injury, and stroke. These trials have also shown cannabinoids to be effective in the

relief of pain and inflammation due rheumatoid arthritis and in cases of brachial plexus injury.

Sativex® was approved in Canada for symptomatic relief of neuropathic pain (2005), unremitting advanced cancer pain (2007), and spasticity related to multiple sclerosis (2010). As of 2014, Sativex® has been made available or approved for patient prescription use in 24 countries, including the UK, Italy, Spain, the Netherlands and Germany. In the US, GW Pharmaceuticals was granted an import license for Sativex® by the DEA following meetings in 2005 with the FDA, DEA, the Office for National Drug Control Policy, and the National Institute for Drug Abuse. Sativex® is currently an investigational drug in FDA-approved clinical trials as an adjunctive analgesic treatment for patients with advanced cancer whose pain is not relieved by opioids.

Neuropathic Pain

Some of the most encouraging clinical data on effects of cannabinoids on chronic pain have emerged from studies of neuropathic pain, caused by neurological mechanisms similar to those that cause phantom pain.[10] The effectiveness of cannabis and cannabinoids in relieving neuropathic pain has been demonstrated in more than three dozen preclinical and clinical trials. It is often effective when opioid painkillers have failed to provide relief. Cannabis can be effective for neuropathic pain even at low doses. Multiple trials indicate that the whole-plant cannabis extract, Sativex®, is effective in reducing pain in patients suffering intractable neuropathic pain. A trial of smoked cannabis to treat neuropathic pain associated with HIV infection in a study of 50 patients showed an average reduction of pain by 30% over a treatment course of only five days.

Phantom Pain

Residual limb pain (phantom pain) is pain isolated at the site of an amputation, affecting 50% to 80% of amputees. All clinical studies have shown that *Cannabis sativa* effectively reduces this form of pain and may also help address some of the underlying causes. Phantom limb pain may occur during the first year after amputation and often remains chronic over months or years, either with no improvement or with an increase in pain over time. Among US veterans currently experiencing phantom limb pain, approximately 33% of the soldiers suffered from pain about 15 days a month and another 27% had pain more than 20 days per month. A 1984 survey of 5,000 US veterans with amputations related to military service found that 78% had current phantom limb pain and only 1% had experienced relief from any ➤

type of treatment. The pain reduction from cannabis medicine reported in clinical studies reflects the benefits often achieved in chronic neuropathic pain associated with cancer, HIV/AIDS, and diabetic neuropathy.

Options for Pain Management
Cannabis and Opioids in Combination

Opioid therapy is often an effective treatment for severe pain, but all opiates have the potential to cause nausea, suppress appetite, and almost always cause severe constipation. The intensity and duration of this nausea can cause enormous discomfort and additional suffering, leading to malnourishment, anorexia, wasting, and a severe decline in a patient's health. Some patients find the nausea so intolerable that they are inclined to discontinue the primary pain treatment, rather than endure the nausea.

Associated weight loss (cachexia) by itself is an independent risk factor for morbidity and mortality. This means that in any disease, significant weight loss will decrease a patient's life expectancy and patients will experience more toxicity from any treatment they receive. This is especially true of cancer patients. Cannabis medicine is widely recognized as an effective antidote for cachexia.

Inhaled cannabis provides almost immediate relief from nausea with significantly fewer adverse side effects than orally ingested Marinol® (synthetic THC). Inhalation allows the active compounds in cannabis to be absorbed into the blood stream with greater speed and efficiency. For this reason, inhalation is an increasingly common, and often preferable, route of administration for many medications.

Cannabis Medicine

The cannabis plant produces more than 400 different chemicals and compounds, which include at least 113 cannabinoids. Another 140 of the plant's constituents are aromatic hydrocarbons known as terpenes, demonstrated to provide therapeutic effects in the treatment of numerous health disorders, such as cancer. Additional constituents of interest include the following:

- *CBD (cannabidiol) and CBC (cannabichromene)* – The second and third most common active compounds in the plant, both exhibit anti-inflammatory and analgesic actions, although weaker than those of THC;
- *Beta-sitosterol* – A non-cannabinoid ingredient found in cannabis that has been shown to decrease inflammation and edema in skin treatment;
- *Cannaflavin A* – A unique flavonoid found only in cannabis, cannaflavin A inhibits the inflammatory molecule PGE-2 thirty times more potently than aspirin;
- *Beta-caryophyllene* – A cannabinoid found in many other plants, as well as cannabis, with strong anti-inflammatory properties and no noticeable side effects, beta-caryophyllen is the most commonly consumed USA FDA-approved cannabinoid in food.

Research has shown that many of the individual cannabinoids, terpenes, and flavonoids have complementary qualities, as well as unique therapeutic and anti-inflammatory effects. A review of more than 20 clinical trials on cannabis and cannabinoids concluded that whole plant cannabis and extracts are superior to oral THC for the treatment of pain, given their ability to mitigate anxiety, nausea, vomiting, and other side-effects of pain. Utilization of the whole plant has been shown conclusively to provide more effective pain control properties in combination than THC alone.

Cannabis Medication	Type/ Contents	US Availability	EU Availability
Marinol®	Dronabinol (synthetic THC); appetite stimulant, cancer nausea, AIDS wasting	Marinol® and Syndros® available in the US with a prescription	Marinol™ available throughout the EU in synthetic form and as an oil-based liquid plant extract
Nabilone® (also marketed as Cesamet®)	Synthetic cannabinoid that mimics THC (may also have properties of CBD)	Chemotherapy nausea	Canada—pain management UK and other EU countries-chemotherapy nausea Belgium—glaucoma, MS
Sativex®	Oromucosal alcohol-based spray in 1:1 concentration of THC and CBD	Nabiximols® in the US	Sativex® in Canada and 21 countries in the EU– MS pain and spasticity
Epidiolex®	Oil-based CBD extract	Approved June 25, 2018 for treatment of Dravet syndrome (epilepsy)	
Arvisol®	Pure CBD in tablet form for treatment of schizophrenia and epilepsy		Phase 1 clinical trials; Echo Pharmacy, Netherlands

References

1. CDC. Provisional drug overdose death counts. Atlanta, GA: National Center for Health Statistics, Centers for Disease Control. Available at: https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm. Accessed 08/01/2018
2. Bradford AC, et al. Association between US state medical cannabis laws and opioid prescribing in the Medicare Part D population [published online April 2, 2018]. *JAMA Intern Med*.
3. Boehnke KF, Litinas E, Clauw DJ. Medical cannabis use is associated with decreased opiate medication use in a retrospective cross-sectional survey of patients with chronic pain. *J Pain*. 2016;17(6):739-744.
4. Reiman A: Patient Profiles: Medical cannabis patients and health care utilization patterns. *Complementary Health Practice Review*. 2000;12:31-50).
5. Mikuriya T. Medical marijuana in California, 1996-2006. *O'Shaughnessy's: Journal of the California Cannabis Research Medical Group.* Spring 2007: 2-8-10.
6. Wilkie G, Sakr B, Rizack T. Medical marijuana use in oncology: a review. *JAMA Oncol*. 2016 Mar 17.
7. Parker LA, Rock EM, Limebeer CL. Regulation of nausea and vomiting by cannabinoids. *Br J Pharmacol*. 2011 Aug;163(7):1411–1422.
8. HelloMD with Brightfield Group. Usage study. 2017. Available at: https://www.hellomd.com/health-wellness/5980e279f15fe13b757557d3/largest-cbd-usage-study-published-by-hellomd-with-brightfield-group. Accessed 08/01/2018.
9. Grant I, Cahn BR. Cannabis and endocannabinoid modulators: Therapeutic promises and challenges. *Clinical Neuroscience Research*. 2005; 5(2-4):185-199.
10. Wilsey B, et al. Low dose vaporized cannabis significantly improves neuropathic pain. *J Pain*. 2013 Feb;14(2):136–148.

See Dr. Gorter's bio page 66.

Endocannabinoids, Phytocannabinoids, Palmitoylethanolamide and Their Fascinating Role in Pain Management

by Chris D. Meletis, ND, and Kimberly Wilkes

Chronic pain is one of the most common complaints affecting modern society with an estimated 25.3 million US adults (11.2%) suffering from this health concern.[1] Furthermore, almost 40 million adults (17.6%) have severe levels of chronic pain.[1] One of the most severe forms of chronic pain is neuropathic pain, which results from damage to the central or peripheral nervous systems.[2] This damage can result from physical trauma such as accidents, surgery, and stroke, diseases such as diabetes, cancer, and immune disorders, and medications such as cancer chemotherapy drugs.[2] Neuropathic pain is also often associated with accompanying mental health disorders such as depression, anxiety, sleep problems, and reduced social interactions.[3]

Standard first-line treatments for neuropathic pain (such as tricyclic antidepressants and selective serotonin norepinephrine reuptake inhibitors) are often not completely effective on all types of neuropathy.[4] In fact, at least 50% of people with neuropathic pain do not notice any clinically meaningful pain relief from their medications.[2] Some medications used for neuropathic pain are accompanied by side effects including dizziness, sedation, depression, and sleep disorders,[2] making them a bad choice for many people.

Another widespread source of chronic pain is osteoarthritis of the knee or hip. Osteoarthritis is the most frequent cause of joint problems in the United States.[5] An estimated 10% of men and 13% of women aged 60 years or older have knee osteoarthritis.[5] In a society where people spend excessive amounts of time staring down at their cell phones or looking at their computer, it's not surprising that neck pain is another common disorder that annually affects 30% to 50% of the general population.[6] Furthermore, at any given time, 31 million people in the US experience low back pain.[7]

Opioids are commonly prescribed to treat chronic pain, either as a first or second line of treatment. Sales of opioid drugs nearly quadrupled from 1999 to 2014.[8] However, opioid drugs are addictive, and overdose of this medication is common. According to Centers for Disease Control and Prevention statistics, drug overdoses killed 63,632 Americans in 2016 and almost two-thirds (66%) of those deaths were the result of a prescription or illicit opioid.[9]

An abundance of research indicates that phytocannabinoids—substances such as cannabidiol (CBD) derived from cannabis and hemp plants – may be effective alternatives. Phytocannabinoids exert much of their actions through the endocannabinoid system, which is involved in pain control. This article will discuss in detail the role of the endocannabinoid system in pain management, how two common phytocannabinoids (THC, the psychoactive component of cannabis and CBD, the non-psychoactive component) differ in their effects on pain, and how a relative newcomer in the realm of natural pain management supplements known as palmitoylethanolamide (PEA) works with the endocannabinoid system to control pain.

The Endocannabinoid System and Pain

Endocannabinoids produced within the body, including anandamide (arachi-donylethanolamide) and 2-arachidonylglycerol (2-AG), are able to activate receptors in the endocannabinoid system. Two important receptors in this system that are involved in pain management are CB_1 and CB_2.[10] In the central nervous system, CB_2 receptor mRNA is not present in the neuronal tissue of human or rat brains.[11] However, it *is* found in brain cells known as microglia when they are activated.[11] Microglia can become activated in states of inflammation and activated microglia themselves can produce pro-inflammatory molecules. The presence of CB_2 in activated microglia indicates it may be involved in blocking the effect of

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painful stimuli in inflammatory processes of the nervous system.[11] Activation of CB_2 receptors blocks the pain response to thermal and mechanical stimuli,[12,13] thermal and tactile hypersensitivity produced by peripheral inflammation,[13-15] and neuropathic pain.[16] The effects of CB_2 receptors on neuropathic pain and inflammation are particularly noteworthy as those conditions are often resistant to treatment, as noted earlier.

is weak in the areas of the brain stem that regulate respiration. This suggests that respiratory depression, a potentially fatal adverse effect of opioid drugs, would not occur when using cannabinoids as painkillers.[10] Additionally, CB_1 receptor agonists (substances that enhance the activity of CB_1) work differently on neurotransmission pathways compared with opioids to induce analgesia.[22]

This difference in pathways may explain why in animal models of neuropathic pain cannabinoid receptor agonists last longer compared with morphine.[23]

Although CBD's ability to inhibit neuropathic pain is only half that of THC, CBD can be given in higher doses without the psychoactive effects that occur with THC.

An extensive amount of evidence points to the endocannabinoid system's role in pain control. According to preclinical studies in animal models, activation of CB_1 or CB_2 receptors leads to a reduction in chemotherapy-induced allodynia (a pain response from stimuli that don't normally cause pain.)[17] Further evidence that the endocannabinoid system is involved in pain regulation is the similarity between endocannabinoids and the pain reliever acetaminophen. The acetaminophen metabolite and endocannabinoid reuptake inhibitor AM 404 indirectly activates CB_1 receptors, which may be responsible for analgesia induced by acetaminophen.[18] Likewise, some non-steroidal anti-inflammatory drugs (NSAIDs) are able to influence the cannabinoid system. The inflammatory enzyme COX-2 breaks down anandamide, an endocannabinoid involved in the regulation of pain perception.[11,19] NSAIDs inhibit the action of the enzyme COX-2, which in turn prevents anandamide destruction.[11,19] Furthermore, clinical studies revealed altered endocannabinoid signaling in patients with chronic pain.[20]

Endocannabinoids control pain in a way that is much safer compared with opioids, although they can indirectly work through the same receptors. CB_2 receptors indirectly stimulate opioid receptors found in primary afferent pathways.[21] Furthermore, CB_1 expression

Researchers are beginning to look beyond the classical CB_1 and CB_2 receptors as potential mediators of some of the beneficial effects of endocannabinoids and phytocannabinoids. For example, type 1 vanilloid receptors ($TRPV_1$) may regulate some cannabinoid effects. The $TRPV_1$ receptor has been identified in neurons that play a role in pain signaling.[17] Other undiscovered cannabinoid receptors may exist, and these receptors may partly mediate some of the analgesic effects associated with cannabinoids.[24,25]

THC vs. CBD in Neuropathic Pain

CB_1 receptors inhibit pain signaling pathways.[10] CB_2 receptors, on the other hand, reduce pain via anti-inflammatory effects.[10] THC directly acts on CB_1 receptors of the endocannabinoid system,[26] which are primarily expressed in the brain, and it can also act on CB_2 receptors.[27]

CBD, although it has a low affinity for CB_1 and CB_2 receptors, indirectly acts on the CB_1 receptors by suppressing the enzymatic breakdown of the endogenous cannabinoid anandamide, increasing the duration of time anandamide stays in the system.[28] As noted earlier, anandamide is involved in the regulation of pain perception.

CBD's effects on the CB_1 receptor counteract the psychoactive effects of THC.[29] In most studies, CBD has thus been shown to inhibit adverse effects of THC including intoxication, sedation, and tachycardia.[29] CBD also acts on the CB_2 receptor, and therefore exerts anti-inflammatory effects important for pain control.[10] The ability of THC or CBD to act on CB_2 receptors blocks activation of the brain cells known as microglia, thereby preventing the development of neuropathic pain.[27]

A number of animal studies indicate CBD alone can reduce neuropathic pain. A mouse model of neuropathic pain caused by injury found that CBD alone had beneficial effects on pain reduction.[30] Although CBD's effects were less powerful than THC, CBD administration was not associated with the psychoactive side effects that accompanied THC.[30] In a rat model of sciatic nerve pain and inflammatory pain, oral treatment with CBD (2.5-20 mg/kg for neuropathic sciatic pain and 20 mg/kg for inflammatory pain) or intraplantar injection from a week to 14 days post-injury reduced the sensitization to painful stimuli.[31] Cannabidiol administration also correlated with a lower level of several inflammatory mediators, such as prostaglandin E(2) (PGE(2)), lipid peroxide, and nitric oxide (NO).[31] In this study, CBD's beneficial effects on pain appeared to be due to its actions on the vanilloid receptors rather than CB_1 or CB_2. The authors concluded, "The results indicate a potential for therapeutic use of cannabidiol in chronic painful states."

CBD has also been shown to be effective in a mouse model of diabetic neuropathy. In diabetic mice, moderate or high doses of cannabidiol administered intranasally, beginning at onset of diabetes, or high doses of CBD given through an intraperitoneal route were associated with a reduction in the development of two measures of diabetic neuropathy: sensitivity to heat and increased pain after being touched (tactile allodynia).[27] This effect lasted during cannabidiol treatment and for the additional four assessments over two months after CBD was discontinued. CBD had no effect on neuropathic pain that was present prior to CBD treatment. One other benefit of CBD was that mice given either medium or high doses of intranasal/intraperitoneal CBD at diabetes onset had lower densities

of microglia in the dorsal spinal cord, an indication of reduced microglia activation.[27]

Rodent models of neuropathy caused by chemotherapy drugs indicate CBD is useful in this instance as well. In a mouse model of neuropathy caused by the chemotherapy drug cisplatin, CBD or THC reduced but did not prevent neuropathy symptoms.[32] In another mouse study, both CBD and THC alone reduced mechanical allodynia caused by the chemotherapy medication paclitaxel.[33] CBD also reduced pain associated with the chemotherapy drug oxaliplatin but not vincristine, while THC significantly reduced vincristine-associated pain but not pain associated with oxaliplatin.[33] Doses of CBD or THC that were too low to be effective when given separately, when given together were effective against pain caused by oxaliplatin but not vincristine.[33]

Although CBD's ability to inhibit neuropathic pain is only half that of THC, CBD can be given in higher doses without the psychoactive effects that occur with THC.[2] Furthermore, long-term use of CBD has been associated with improved efficacy in regards to pain control compared with short-term administration.[2]

With the promising results achieved in animal studies, it is surprising that clinical trials investigating the use of CBD alone on neuropathic pain are lacking. All of the clinical studies have evaluated the use of CBD combined with THC. Many of these studies have found the combination of the two phytocannabinoids to be effective in neuropathic pain.[34-36]

Joint Pain and Phytocannabinoids

Endocannabinoids and phyto-cannabinoids are able to affect pain pathways in the joints. Cannabinoid receptors, including CB_1, CB_2, GPR55, PPARα, and PPARγ, have been found on human articular cartilage from patients with symptomatic osteoarthritis (OA).[37] According to one group of researchers, "Chondrocytes from OA joints were shown to express a wide range of cannabinoid receptors even in degenerate tissues, demonstrating that these cells could respond to cannabinoids."[37] OA leads to a combination of inflammatory, nociceptive, and neuropathic pain. The endocannabinoid system has been shown to reduce all of these types of pain.[38]

CBD was studied for its effects on experimental osteoarthritis in rats. After administration of peripheral CBD (100-300 µg) to rats with end-stage OA, there was a dose dependent decline in joint afferent firing rate.[39] Furthermore, although 100 or 200 µg of CBD did not produce any benefits, 300 µg CBD was associated with increased withdrawal threshold and weight bearing. Local CBD administration also alleviated acute, transient joint inflammation. Prophylactic administration of CBD blocked the development of subsequent joint pain and nerve damage. The researchers concluded, "These findings suggest that CBD may be a safe, useful therapeutic for treating OA joint neuropathic pain."

In collagen-induced arthritis (CIA), a model for rheumatoid arthritis, CBD at 5 mg/kg per day i.p. or 25 mg/kg per day orally resulted in clinical improvement associated with protection against severe joint damage.[40] CBD led to a reduction in IFN-gamma production and decreased synthesis of tumor necrosis factor by knee synovial cells. In vitro, CBD induced a dose-dependent inhibition of lymphocyte proliferation, both mitogen-stimulated and antigen-specific, and suppression of Zymosan-triggered reactive oxygen burst by peritoneal granulocytes.[40] In mice, CBD blocked the rise in serum tumor necrosis factor caused by lipopolysaccharides.[40] According to the authors, "Taken together, these data show that CBD, through its combined immunosuppressive and anti-inflammatory actions, has a potent anti-arthritic effect in CIA."

Despite promising preclinical studies and reports from clinical practice as well as a great deal of in vitro justification as to why cannabinoids likely support joint health,[41] there is a paucity of human studies investigating the effects of cannabinoids on joint pain.[41]

Phytocannabinoid Use in Other Forms of Pain

Phytocannabinoids have been studied for their effects on other forms of pain. In a randomized, double-blind, placebo-controlled trial, the semisynthetic THC analog nabilone was shown to reduce pain and improve quality of life and sleep in people with fibromyalgia.[42] In another study, kidney transplant patients experiencing pain were given CBD.[43] The study included seven patients who were given an initial dose of up to 100 mg/day of CBD. Two participants experienced complete improvement of pain, four had a partial response in the first 15 days, and one subject experienced no change.

Furthermore, cannabinoid-rich hemp oil reduced body pain and improved other symptoms in girls who had an adverse reaction to the human papillomavirus (HPV) vaccine.[44] Other evidence indicates the oil of cannabis seeds reduces pain in patients with chronic musculoskeletal inflammation, an effect attributed to the ideal omega-3/omega-6 ratio content.[45]

Treating pain properly involves addressing more than just physical discomfort. Pain is a multidimensional problem that also encompasses impairments in mood, cognition, and function. Cannabidiol has been shown to improve mental health in a number of studies. We addressed the evidence supporting CBD's role in mental health in greater detail in an article in the *Townsend Letter* earlier this year.

The Role of Palmitoylethanolamide (PEA) in Pain Management

A promising new strategy for resolving pain is to use palmitoylethanolamide (PEA) in combination with CBD. When in pain, the body produces PEA, which acts as a natural painkiller.[46] PEA is also found in foods such as egg yolks, peanuts, and soybeans. It is not found in cannabis and is not classified as an endocannabinoid. However, it acts on the endocannabinoid system by helping the body use anandamide more effectively.[46]

Accumulating evidence points to the role of neuroinflammation, characterized by infiltration of immune cells, activation of mast cells and glial cells, and synthesis of inflammatory mediators in the peripheral and central nervous systems, in chronic pain.[46] PEA is an anti-inflammatory and pro-

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resolving lipid mediator that reduces mast cell activation and regulates glial cell behaviors.[46-48]

A meta-analysis of 12 double-blind, controlled, and open-label clinical trials found that PEA supplementation leads to a progressive decrease in pain intensity that is substantially greater compared to the controls.[46] The pain reduction in PEA-treated patients was 1.04 points every two weeks with a 35% response variance explained by the linear model. Conversely, in the control groups, pain reduction intensity was 0.20 points every two weeks with only 1% of the total variance explained by the regression. Pain scores on the Kaplan-Meier estimator was ≤ 3 in 81% of patients given PEA whereas only 40% of control subjects had a score ≤ 3, 60 days after the beginning of the trial. The researchers concluded, "These results confirm that PEA might represent an exciting, new therapeutic strategy to manage chronic and neuropathic pain associated with neuroinflammation."

Conclusion

Chronic pain is a debilitating condition that is widespread among the population. Regulating the endocannabinoid system through the use of phytocannabinoids and PEA is an alternative to other pain control approaches associated with potentially dangerous side effects. The use of these agents is associated with improvements in pain caused by various forms of neuropathy, joint problems, and other pain disorders. The benefits are achieved through modulation of not only the endocannabinoid system but also indirect influence on opioid receptors.

References

1. Nahin RL. Estimates of pain prevalence and severity in adults: United States, 2012. *J Pain*. 2015 Aug;16(8):769-80.
2. Casey SL, Vaughan CW. Plant-Based Cannabinoids for the Treatment of Chronic Neuropathic Pain. *Medicines* (Basel). 2018 Jul 1;5(3).pii: E67.
3. Turk DC, et al. Assessment and treatment of psychosocial comorbidities in patients with neuropathic pain. *Mayo Clin Proc*. 2010 Mar;85(3 Suppl):S42-50.
4. Dworkin RH, et al. Recommendations for the Pharmacological Management of Neuropathic Pain: An Overview and Literature Update. *Mayo Clin Proc*. 2010 Mar;85(3 Suppl):S3-S14.
5. Zhang Y, Jordan JM. Epidemiology of Osteoarthritis. *Clin Geriatr Med*. 2010 Aug; 26(3):355-69.
6. Hogg-Johnson S, et al. The burden and determinants of neck pain in the general population: results of the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders. *J Manipulative Physiol Ther*. 2009 Feb;32(2 Suppl):S46-60.
7. American Chiropractic Association. https://www.acatoday.org/Patients/Health-Wellness-Information/Back-Pain-Facts-and-Statistics Accessed August 1, 2018.
8. Centers for Disease Control and Prevention. https://www.cdc.gov/drugoverdose/data/prescribing.html Accessed August 1, 2018.
9. U.S. drug overdose deaths continue to rise; increase fueled by synthetic opioids. Press Release. Centers for Disease Control and Prevention. March 29, 2018. https://www.cdc.gov/media/releases/2018/p0329-drug-overdose-deaths.html Accessed August 2, 2018.
10. Miller RJ, Miller RE. Is cannabis an effective treatment for joint pain? *Clin Exp Rheumatol*. 2017 Sep-Oct;35 Suppl 107(5):59-67.
11. J Manzanares, Julian MD, Carrascosa A. Role of the Cannabinoid System in Pain Control and Therapeutic Implications for the Management of Acute and Chronic Pain Episodes. *Curr Neuropharmacol*. 2006 Jul;4(3):239-57.
12. Malan TP, et al. CB2 cannabinoid receptor-mediated peripheral antinociception. *Pain*. 2001 Sep;93(3):239-45.
13. Clayton N, et al. CB1 and CB2 cannabinoid receptors are implicated in inflammatory pain. *Pain*. 2002 Apr;96(3):253-60.
14. Nackley AG, Makriyannis A, Hohmann AG. Selective activation of cannabinoid CB(2) receptors suppresses spinal fos protein expression and pain behavior in a rat model of inflammation. *Neuroscience*. 2003;119(3):747-57.
15. Quartilho A, et al. Inhibition of inflammatory hyperalgesia by activation of peripheral CB2 cannabinoid receptors. *Anesthesiology*. 2003 Oct;99(4):955-60.
16. Ibrahim MM, et al. Activation of CB2 cannabinoid receptors by AM1241 inhibits experimental neuropathic pain: pain inhibition by receptors not present in the CNS. *Proc Natl Acad Sci U S A*. 2003 Sep 2;100(18):10529-33.
17. O'Hearn S, et al. Modulating the endocannabinoid pathway as treatment for peripheral neuropathic pain: a selected review of preclinical studies. *Ann Palliat Med*. 2017 Dec;6(Suppl 2):S209-14.
18. Klinger-Gratz PP, et al. Acetaminophen Relieves Inflammatory Pain through CB1 Cannabinoid Receptors in the Rostral Ventromedial Medulla. *J Neurosci*. 2018 Jan 10;38(2):322-34.
19. Păunescu H, et al. Cannabinoid system and cyclooxygenases inhibitors. *J Med Life*. 2011 Jan-Mar;4(1):11-20.
20. Huang WJ, Chen WW, Zhang X. Endocannabinoid system: Role in depression, reward and pain control (Review). *Mol Med Rep*. 2016 Oct;14(4):2899-903.
21. Ibrahim MM, et al. CB2 cannabinoid receptor activation produces antinociception by stimulating peripheral release of endogenous opioids. *Proc Natl Acad Sci U S A*. 2005 Feb 22;102(8):3093-8.
22. Jennings EA, Vaughan CW, Christie MJ. Cannabinoid actions on rat superficial medullary dorsal horn neurons in vitro. *J Physiol*. 2001 Aug 1;534(Pt 3):805-12.
23. Mao J, et al. Two distinctive antinociceptive systems in rats with pathological pain. *Neurosci Lett*. 2000 Feb 11;280(1):13-6.
24. Breivogel CS, et al. Evidence for a new G protein-coupled cannabinoid receptor in mouse brain. *Mol Pharmacol*. 2001 Jul;60(1):155-63.
25. Hájos N, Ledent C, Freund TF. Novel cannabinoid-sensitive receptor mediates inhibition of glutamatergic synaptic transmission in the hippocampus. *Neuroscience*. 2001;106(1):1-4.
26. Bhattacharyya S, Egerton A, Kim E, et al. Acute induction of anxiety in humans by delta-9-tetrahydrocannabinol related to amygdalar cannabinoid-1 (CB1) receptors. *Sci Rep*. 2017 Nov 3;7(1):15025.
27. Toth CC, Jedrzejewski NM, Ellis CL, et al. Cannabinoid-mediated modulation of neuropathic pain and microglial accumulation in a model of murine type I diabetic peripheral neuropathic pain. *Mol Pain*. 2010 Mar 17;6:16.
28. Leweke FM, Piomelli D, Pahlisch F, et al. Cannabidiol enhances anandamide signaling and alleviates psychotic symptoms of schizophrenia. *Transl Psychiatry*. 2012 Mar 20;2:e94.
29. Russo E, Guy GW. A tale of two cannabinoids: the therapeutic rationale for combining tetrahydrocannabinol and cannabidiol. *Med Hypotheses*. 2006;66(2):234-46.
30. Casey SL, Atwal N, Vaughan CW. Cannabis constituent synergy in a mouse neuropathic pain model. *Pain*. 2017 Dec;158(12):2452-60.
31. Costa B, Trovato AE, Comelli F, et al. The non-psychoactive cannabis constituent cannabidiol is an orally effective therapeutic agent in rat chronic inflammatory and neuropathic pain. *Eur J Pharmacol*. 2007 Feb 5;556(1-3):75-83.
32. Harris HM, Sufka KJ, Gul W, et al. Effects of Delta-9-Tetrahydrocannabinol and Cannabidiol on Cisplatin-Induced Neuropathy in Mice. *Planta Med*. 2016 Aug;82(13):1169-72.
33. King KM, Myers AM, Soroka-Monzo AJ, et al. Single and combined effects of Δ^9-tetrahydrocannabinol and cannabidiol in a mouse model of chemotherapy-induced neuropathic pain. *Br J Pharmacol*. 2017 Sep;174(17):2832-41.
34. Russo M, Naro A, Leo A, et al. Evaluating Sativex® in Neuropathic Pain Management: A Clinical and Neurophysiological Assessment in Multiple Sclerosis. *Pain Med*. 2016 Jun;17(6):1145-54.
35. Nurmikko TJ, Serpell MG, Hoggart B, et al. Sativex successfully treats neuropathic pain characterised by allodynia: a randomised, double-blind, placebo-controlled clinical trial. *Pain*. 2007 Dec 15;133(1-3):210-20.
36. Hoggart B, Ratcliffe S, Ehler E, et al. A multicentre, open-label, follow-on study to assess the long-term maintenance of effect, tolerance and safety of THC/CBD oromucosal spray in the management of neuropathic pain. *J Neurol*. 2015 Jan;262(1):27-40.
37. Dunn SL, Wilkinson JM, Crawford A, et al. Expression of Cannabinoid Receptors in Human Osteoarthritic Cartilage: Implications for Future Therapies. *Cannabis Cannabinoid Res*. 2016 Jan 1;1(1):3-15.
38. O'Brien M, McDougall JJ. Cannabis and joints: scientific evidence for the alleviation of osteoarthritis pain by cannabinoids. *Curr Opin Pharmacol*. 2018 Apr 7;40:104-9.
39. Philpott HT, O'Brien M, McDougall JJ. Attenuation of early phase inflammation by cannabidiol prevents pain and nerve damage in rat osteoarthritis. *Pain*. 2017 Dec;158(12):2442-51.
40. Malfait AM, Gallily R, Sumariwalla PF, et al. The nonpsychoactive cannabis constituent cannabidiol is an oral anti-arthritic therapeutic in murine collagen-induced arthritis. *Proc Natl Acad Sci U S A*. 2000 Aug 15;97(17):9561-6.
41. La Porta C, Bura SA, Negrete R, et al. Involvement of the endocannabinoid system in osteoarthritis pain. *Eur J Neurosci*. 2014 Feb;39(3):485-500.
42. Skrabek RQ, Galimova L, Ethans K, et al. Nabilone for the treatment of pain in fibromyalgia. *J Pain*. 2008 Feb;9(2):164-73.
43. Cuñetti L, Manzo L, Peyraube R, et al. Chronic Pain Treatment With Cannabidiol in Kidney Transplant Patients in Uruguay. *Transplant Proc*. 2018 Mar;50(2):461-4.
44. Palmieri B, Laurino C, Vadalà M. Short-Term Efficacy of CBD-Enriched Hemp Oil in Girls with Dysautonomic Syndrome after Human Papillomavirus Vaccination. *Isr Med Assoc J*. 2017 Feb;19(2):79-84.
45. Shaladi AM, Crestani F, Tartari S, et al. [Cannabinoids in the control of pain]. [Article in Italian, Abstract in English]. *Recenti Prog Med*. 2008 Dec;99(12):616-24.
46. Paladini A, Fusco M, Cenacchi T, et al. Palmitoylethanolamide, a Special Food for Medical Purposes, in the Treatment of Chronic Pain: A Pooled Data Meta-analysis. *Pain Physician*. 2016;19:11-24.
47. Facci L, Dal Toso R, Romanello S, et al. Mast cells express a peripheral cannabinoid receptor with differential sensitivity to anandamide and palmitoylethanolamide. *Proc Natl Acad Sci U S A*. 1995 Apr 11;92(8):3376-80.
48. Franklin A, Parmentier-Batteur S, Walter L, et al. Palmitoylethanolamide increases after focal cerebral ischemia and potentiates microglial cell motility. *J Neurosci*. 2003 Aug 27;23(21):7767-75.

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Rx: Earth – The Original Painkiller!

Exploiting the Planet's Natural Anti-Inflammatory Power for Pain Relief

by James L. Oschman,* PhD, Stephen T. Sinatra, MD, Gaétan Chevalier, PhD, and Martin Zucker

In all things of Nature there is something of the marvelous.

– Aristotle, almost 2500 years ago

There are so many people in the severe pain category that something has to be done…If people are in the most severe category of pain, whatever treatment they are getting may be inadequate.

– National Center for Complementary and Integrative Health epidemiologist Richard Nahin [1]

Life is too rapid and subtle to be explained by slow moving chemical reactions and nerve impulses.

– Nobel Prize Laureate Albert Szent-Györgyi [2]

You likely encounter chronic pain routinely in your clinical practice. You are not alone. Chronic pain is a global epidemic, affecting perhaps as many as 20 percent of adults.[3] In 2011, the Institute of Medicine estimated that pain affects about one-third of the US population − more than diabetes, heart disease, and cancer combined, at a cost of well over half-a-trillion dollars in treatments and lost productivity.[4]

How can so much pain be possible in this age of medical miracles? Why is relief so elusive and frustrating, often requiring patients to consult multiple practitioners?

Conventional treatments typically feature painkilling drugs that create many side effects. Some of the most effective drugs, such as the opioids, are extremely addictive. They are synthesized from morphine, and synthetic opioids such as fentanyl and its analogues are becoming a big part of the problem. Together, these substances have created a serious spike in drug-related deaths: a record 42,000 in the US in 2016, 40% of which involved a prescription opioid. So bad is the situation that the US Government declared a health emergency in 2017.[5]

The problem is on the rise elsewhere throughout the world as well. [6]

Dealing with pain on a daily basis can drive some people into depression, and even suicide.[7] Many medication users lack awareness of the risks. They can't protect themselves.

Health officials are demanding safer options beyond increasing awareness and regulation of prescription practices. What about finding better and safer ways of treating pain?

The world is crying in pain. The world has a solution. The planet itself. Nature's original painkiller.

The Healing Earth

As strange as it may sound, the planet we live on packs potent painkilling power. It's a natural analgesic. Research is starting to reveal its amazing healing properties.

Here's the background: The Earth is endowed with what you might call "electric nutrition," a virtually limitless supply of mobile antioxidant electrons that gives the ground we walk on (as well as our lakes and oceans) a natural negative electric charge.[8] This negative charge, according to extensive geophysical and atmospheric research,[9, 10] is maintained (that is, the electron supply replenished) by a so-called global atmospheric electrical circuit involving solar radiation and lightning strikes.

This phenomenon nourishes all living beings – humans, animals, and plants. The new research indicates that direct contact with the Earth restores and stabilizes the bioelectrical circuitry that governs our physiology and organs. It recharges our blood, thins it,[11] and powerfully and quickly knocks down inflammation and pain. It enhances immune function. The degree to which this resource nourishes, protects, and heals appears to be quite substantial, and of great medical significance.

The Earth is an electric and magnetic planet, and we are bioelectrical and bioelectronic beings living on an electric and magnetic planet. To date, biomedical research on the electrical and electronic aspects of the human body has focused narrowly on the diagnostic applications of the electrocardiogram, electroencephalogram, electromyogram, and electroretinogram. Biophysicists have gone further in the study of these biofields, but their applications have made little impact on a medical system dominated by biochemical and pharmacological models.

We Live on the Earth but We Have Abandoned Its Healing Powers

Nature seems to have designed living things to have routine contact with the planet, a vital but vastly overlooked symbiotic relationship. A relationship, we believe, essential to health and life. We further believe that the abandonment of this relationship

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Grounding My Patients: One Practitioner's Experience

Wendy Menigoz, DN (Doctor of Naprapathy), a naprapathic pain specialist in Bourbonnais, Illinois, has routinely recommended and applied grounding to patients for more than eight years.

"People I see are often desperate. After an initial consultation, I give them some grounding patches, and tell them to come back in a week. I tell them to ground themselves in bed at night. They come back, with their pain dramatically reduced, sometimes gone altogether. Probably 98 percent of my patients are grounding. They love it.

"I see head, neck and back pain, period pain, plantar fasciitis, rheumatoid arthritis and fibromyalgia, and everything in between. My patients include doctors and other health professionals, who have tried everything else before they come to see me.

"Some, after experiencing significant benefits from Earthing, have asked me, 'How long do I have to do this?' I laugh, and answer that for as long as they want to feel better.

"To explain grounding to patients, I just remind them that vitamin D comes from a ball – the sun – 93 million miles away sending us energy frequency that reaches our skin. We also have a ball – the Earth we live on – that has energy frequencies we need in order to be healthy. That seems to make sense to patients. Simple and easy to understand.

"I require my patients to ground themselves. I sell them a $10 Earthing cord and give them a strip of patches. If it doesn't work, I give them back their money. I get very few of those. People love it. It works. It's simple.

"Keep in mind that I put these folks on some diet and supplement program as well. A combination. To me grounding is every bit as important as drinking enough water, getting sunshine, fresh air, and eating well.

"I get a lot of young women in their 20s with terrible cramps, blood flow not good. I tell them to lie on an Earthing mat or place it across their belly and sleep with it. They can't believe how it gets rid of their period cramps.

"Many women have said they weren't regular ever and now their periods come right on time. Not all, but some women will lose their hot flashes. One of the 'worse things' about grounding is that some of my middle-aged women get their periods back because they are getting healthy. They aren't happy about that.

"Well, I tell them, do you feel better, aches and pains gone, sex drive back?

"Well yes, they say. 'I love/hate you.'

"The fibromyalgia patients seem to get the quickest results. People with all-over body pains. They will tell me they aren't stiff in the morning anymore, or can go long periods of time without any pain at all.

"I have a patient, 54, with severe rheumatoid arthritis. If you saw her, you would be wondering how she was walking. Crippled up. Now she walks all over. She has had surgery on her ankles, hips, wrists, and is in pain constantly. She is a friend. I had been talking to her about Earthing, but she didn't listen. She finally came in. I talked to her about Earthing…again. Her husband was there and said openly it was ridiculous.

"I said just try it, and if doesn't work I will give you your money back. This time she listened. She came back two weeks later. 'I cannot believe how my pain has decreased,' she said, almost in tears. She had just come back from a trip from Europe and said she was able to walk on the tour. Before she could never do that without bad pain and pain medication.

"She said she not only got significant overall pain reduction but also her period back after five years.

"People facing knee or hip replacement? Earthing patches or wrapping their joints with an Earthing mat helps take the pain away at night. And it will help them get through the day if they patch at night. If there is a lack of cartilage, Earthing helps to create an environment where perhaps cartilage regrowth can happen. But I also need to get vitamins and minerals into them.

"I tell them to put the mat under their hips or low back.

"One new patient, his early 60s, came in on a Thursday. He works as an exterminator, and, on the weekend, plays in two different rock bands as a drummer. In his work, he carries around a heavy spray container. He complained that he couldn't move his right arm. His shoulder was killing him. He had a gig the next night.

"I told him I wasn't going to work on him, but I was going to give him an Earthing cord and some patches. And said that would help take down the inflammation. Then I explained Earthing. He was looking at me and didn't seem happy about my opinion. I then said to him that if I work on him and do my soft tissue and connective tissue work on him, he would be sore afterward and absolutely wouldn't be able to use that arm. I told him to go home, put this patch on, wear it that night, and then while drumming, use the patch on the scapula, below the shoulder. He very reluctantly said he would, but I could see he thought he had wasted his money. I told him to come back Tuesday.

"When he came back. I had an intern with me. I asked him how he was doing. He answered, 'If I wasn't married, I would ask you to marry me!' We both started laughing.

"He told me that when he had left on Thursday he was pissed. When he got home he threw the patches and cord on the kitchen table. His wife was cool and said he might as well try it, since he paid for it.

"'So I put it on my shoulder,' he told me. 'I slept like a danged baby. I got up and I felt great. And I put it on while I was drumming the next night. I am the oldest guy in the group. These guys are in their late 20s and early 30s. Normally if I do one band job on a Friday night and Saturday and Sunday I am dead. I kicked butt that night. Slept with the patch Friday night, and drummed again on Saturday night. I was going like a madman.'

"After a couple of weeks, continuing his grounding, he told me that he was able to handle the spray tank without any problem during his exterminating job.

"Patients have told me that headaches have disappeared or dramatically lessened in intensity. Several women with multiple sclerosis have had remarkable remissions. One of them is a woman whose developmentally disabled daughter also benefitted with major relief of arthritic ankles. Patients with sciatica, plantar fasciitis, and various kinds of diabetic neuropathy have also benefitted. They take much less pain medication. They feel better and they are happier.

"One man had been scheduled for double knee replacement surgery. His pain level dropped so much in a short period of time that the operation was put on hold. He's out biking and exercising. He couldn't do that before.

"I told a friend about Earthing whose husband is a veterinarian with chronic hip pain. She brought him a grounding mat and he said he would use 'the silly thing' to humor her. He put it in his bed. The next morning he woke up without pain. The pain is still gone years later!

"I've seen many cases of improved blood pressure. A few male patients mentioned improvement of erectile dysfunction, which I assume is a result of better circulation.

"I've repeatedly seen conditions healed or improved that typically never get better, or that are typically treated with medication simply to manage the symptoms."

in much of the modern world has led to a deficiency disorder perhaps more consequential than scurvy, rickets, goiter, and other well-recognized deficiency diseases. These disorders have long been understood and have little significance in modern times. In contrast, what we call "electron deficiency" is widespread, and largely unrecognized by modern medicine.

Throughout history, indigenous peoples have been connected to the "electric nutrition" in the ground. They honored their connectedness, describing the energy of the Earth in different ways. Native Americans utilized "Earth Mother's" healing powers in various ways as part of "good medicine" practices. And Earth Qi is one of the five elements (Wood, Fire, Earth, Metal, and Water) in Traditional Chinese Medicine.

Western medical science has shown scant interest.

Earlier generations and cultures went barefoot routinely, often slept on conductive animal hides, and used leather footwear (from hides), allowing them to draw the Earth's healing force into their bodies. In the late 1800s, a Back-to-Nature movement in Germany featured walking barefoot and even sleeping on the ground. Great healing stories were reported.[12] The naturopathic profession grew out of this German movement, but the barefoot and ground contact-for-health idea never really caught on as a therapeutic concept.

Modern lifestyle has disconnected most of us from many aspects of Nature, including our planet's healing energy and the sun's essential light. Except for when we are kids or on holidays as adults at a lake or ocean, we rarely venture out barefoot to make skin contact with the "skin of the Earth." As a result, we are missing something of profound importance.

Today, we wear insulating rubber- or plastic-soled shoes. We no longer sleep on the ground or use bedding made from animal hides. We sleep in elevated beds. Many of us live and/or work in high rises far above ground level.

We are typically and increasingly disconnected, a separation from the Earth that the emerging research[13] suggests may be a totally overlooked cause of abnormal physiology, contributing to pain, inflammation, fatigue, stress, poor sleep, autoimmune disorders, and a wide range of other costly and debilitating conditions. By reconnecting to the Earth's energy, many common symptoms and their causes are reduced and sometimes even eliminated, inflammation and pain among them.

Bodies are inflamed – on fire.

The grounding research and the enthusiastic reports from people who use Earthing suggest that the Earth's energy extinguishes the flames. The process likely involves transference of free electrons from the Earth into the body, where the electrons neutralize destructive free radicals stoking chronic inflammation.

The Earthing hypothesis holds that grounding allows a rapid influx of mobile electrons into the body that essentially puts a brake on inflammation and keeps free radicals from leaking away from sites where they are needed.

Such welcome benefits result from routinely walking/sitting barefoot outdoors or while indoors sleeping or sitting in contact with conductive mats, sheets, body bands, and patches. Such conductive products are connected by a wire to the Earth, either through the ground port of a properly grounded wall outlet or a ground rod placed in the soil outside.

Barefooting or using conductive products indoors for health purposes has been called Earthing or grounding. You may have heard the terms. Grounding research started more than 15 years ago, independently in the US and Poland. Two dozen small studies to date have consistently shown that grounding brings the body toward physiological and biochemical balance. The latest one, submitted recently for publication, shows that grounding appears to be an effective blood pressure reducing therapy. Much more research is obviously needed, and on a larger scale.

The Original Anti-inflammatory

One major finding is that the Earth packs a potent anti-inflammatory punch. This is a highly important finding. Inflammation has become recognized as a primary trigger and player in chronic pain and most major health disorders, including cardiovascular disease, diabetes, arthritis, Alzheimer's, cancer, autoimmune conditions, and all of the so-called "diseases of aging."

Free radicals, also known as reactive oxygen species (ROS), are unstable molecules produced by the immune system. They are secreted by neutrophils and other white blood cells at a site of injury in a process called the inflammatory burst. These molecules destroy and dismantle pathogens and damaged tissue by stripping away electrons, an essential process in wound healing that clears the repair field so that regenerative cells can move in and restore cell and tissue integrity. Free radicals are "electron hungry." In chronic inflammation, they can run amok, create a chain reaction, and damage healthy molecules and DNA in healthy tissues adjacent to the repair field. A "vicious cycle" of oxidative damage occurs, via secondary oxidative bursts, and overwhelms the body's antioxidant defenses. The ROS tear electrons from healthy tissues and cells, and cause damage that can ultimately lead to chronic disease. We believe this is a plausible explanation of how an acute injury can evolve into a painful and extensive situation.[14]

The Earthing hypothesis holds that grounding allows a rapid influx of mobile electrons into the body that essentially puts a brake on inflammation and keeps free radicals from leaking away from sites where they are needed. If the body were grounded most hours of the day, the research suggests, little or no inflammation could be present.

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Certain foods are recognized to have anti-inflammatory or antioxidant properties. The Earth clearly has such power, but infinitely larger. There is no comparison. Dietary antioxidant molecules must traverse various barriers to reach places where they are needed to neutralize free radicals and moderate pain and inflammation. The molecules must be absorbed from the digestive tract before their antioxidant activity is destroyed by digestive enzymes. They must then be carried through the blood, cross blood vessel walls, diffuse through extracellular fluids, and cross cell membranes. The inefficiency of this process is documented by the slowness of inflammation control using dietary or pharmacological antioxidants. In contrast, electrons from the Earth are semi-conducted throughout the fabric of the body virtually instantaneously. Pain relief occurs rapidly, even for old injuries that have caused pain for many years.

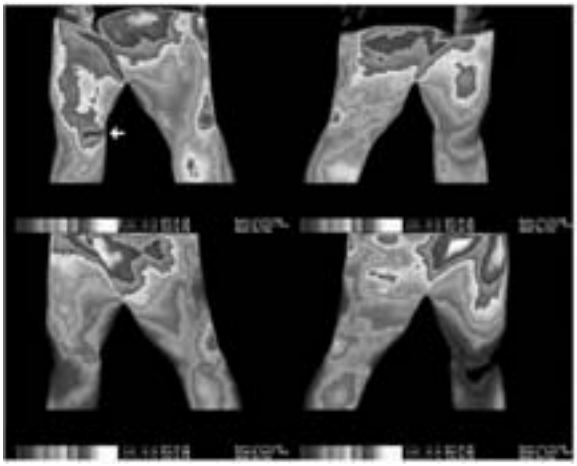


Figure 1. Images of a 33-year-old woman who had a gymnastics injury at age 15 and subsequent 18-year history of chronic right knee pain, swelling, and instability. Top row images taken in walking position to show inside of both knees. Arrow points to exact location of patient's pain and shows significant inflammation. Lower images taken after 30 minutes of exposure to grounding in clinic using a conductive patch. Note significant reduction of inflammation in knee area. After 6 days of grounding, patient reported a 50% reduction in pain. After 4 weeks of treatment, patient was able to play soccer, and by 12 weeks she went waterskiing.

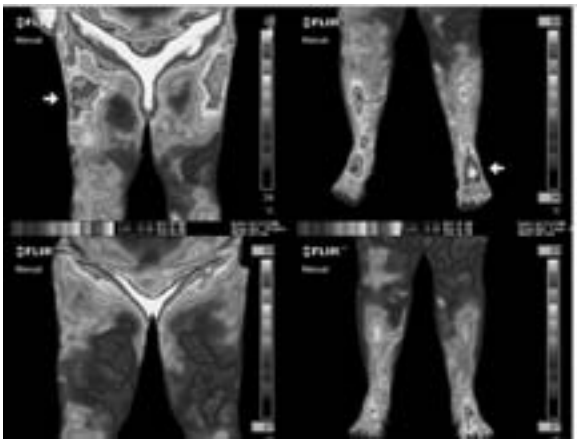


Figure 2. Images of a 65-year-old woman with chronic thigh and knee pain on the right side, ankle and foot pain, and swelling of the left foot. Top row shows lower extremities taken before patient slept grounded. Arrows show most significant areas of inflammation, and where subject reported most pain. Bottom images taken after 4 nights sleeping grounded. Note significant reduction in inflammation and return toward normal thermal symmetry. Patient reported steady continued improvement at a 40-day follow-up.

The Grounding Effect

Various studies have begun to show how grounding impacts inflammation and pain, beginning with medical infrared imaging.[15]

The thermography examples in Figures 1 and 2 bring out two important points:

- Earthing can very rapidly reverse painful inflammation.
- Earthing can quickly reverse painful inflammation that has been a problem for many years.

Evidence has come as well from two studies based on a sports medicine research model called delayed onset muscular soreness (DOMS) that involves creating a temporary injury to then evaluate pain-relief modalities. DOMS refers to the pain and stiffness felt in muscles several hours to days after unaccustomed or strenuous exercise. The pain arises in affected muscles from temporary small-scale damage (micro trauma) to muscle fibers. It is a dull, aching pain, often combined with tenderness and stiffness, usually increasing in intensity in the first 24 hours after exercise and peaking from 24 to 72 hours. It then subsides and disappears up to seven days after exercise.

A pilot study was designed in 2010 to assess any inflammatory markers and pain measure differences between subjects who had all undergone a bout of standardized eccentric exercises and were then either ''grounded'' by sleeping on patented Earthing sheets or who slept on ungrounded sheets. The results showed that Earthing significantly reduced the degree and duration of soreness and inflammation.[16]

In a second DOMS study, grounding reduced blood creatine kinase (CK) and changed blood counts related to inflammation only among grounded participants. Grounding significantly reduced the loss of CK from the injured muscles indicating reduced muscle damage.[17]

A 2017 study by doctors at the Pennsylvania State University Children's Hospital Neonatal Intensive Care Unit in Hershey revealed another angle on how grounding may influence inflammation. The researchers found that grounding premature infants produced immediate and significant improvements in measurements of autonomic nervous system (ANS) functioning critically important in the regulation of inflammatory and stress responses.[18]

Grounding the babies, clinically stable and from five to sixty days of age, strongly increased measures of heart rate variability (HRV) that indicated improved vagal tone. HRV refers to beat-to-beat alterations in heart rate, and is influenced by the sympathetic and parasympathetic branches of the ANS.

Grounding was achieved by adhering a grounding patch on the skin of the babies, while in their incubators or cribs, and connecting the patch wire to the hospital's grounding system.

Among the babies tested, "grounding raised parasympathetic tone within minutes," says researcher Charles Palmer, MB. ChB. "We obviously need

more research to further document that grounding may enhance vagus nerve transmission and thereby improve stress and inflammatory regulatory mechanisms in preterm infants."

Recent research has revealed that the vagus nerve plays a major role in the so-called "anti-inflammatory reflex," a mechanism controlling basic immune responses and inflammation during pathogen invasion and tissue injury. Among other things, the nerve's actions help to inhibit excessive production of pro-inflammatory chemicals.[19, 20]

Action of Electrons

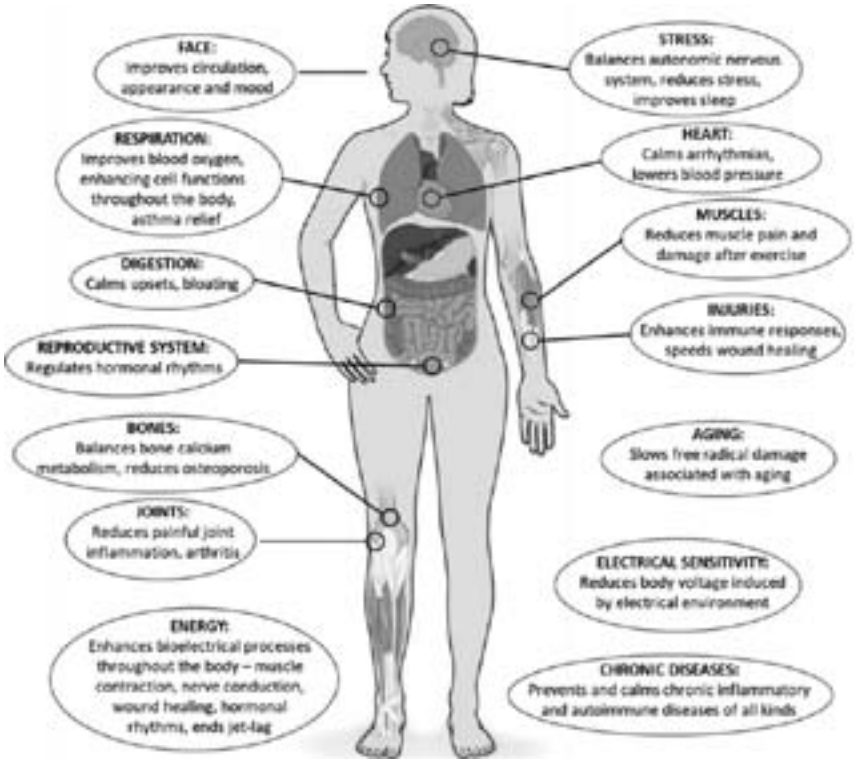
Earthing quenches pain in virtually any part of the body, including pain from very old injuries. And does so rapidly. It produces a powerful and positive shift in the electrical state of the body and the electrodynamics of blood, and a boost to self-healing and self-regulating mechanisms. There are many side-benefits to this process, as shown in Figure 3.

Those familiar with classical physiology and biochemistry will recognize that the discoveries summarized here do not make much sense from what is known in those fields. It is necessary to turn to biophysics, and to the presence of a cellular and anatomical basis for a continuous molecular network that extends throughout the human body, even to the interior of every cell and nucleus. It has been suggested that this system-wide network is the basis for the acupuncture meridian system and the ability to rapidly deliver antioxidant electrons to sites of inflammation. This system has been termed *the living matrix* and is now thought to be a semiconductor network capable of rapid charge transfer throughout the body.[21]

Connective tissues, myofascial, tendons, cell membranes, and cellular cytoskeletal networks belong to this electronic infrastructure. The multiple pathways of this living matrix facilitate the influx of free electrons to reach and neutralize free radicals that are the hallmark of chronic inflammation. Not only that, this arrangement also helps explain why many grounded individuals feel better and more energized. It seems logical to suggest that the influx of electrons from the Earth saturates their mitochondrial electron transport chains that generate adenosine triphosphate (ATP), the energy molecule that powers all of life's activities.

This remarkable insight regarded proteins as semiconductors, rather than insulators, as had been thought previously, and thus represent countless

Figure 3 Systemic Benefits of Grounding



You may recognize the name of Albert Szent-Györgyi, an early pioneer in the emerging field of quantum biology, but best known as the Hungarian biochemist who won the Nobel Prize in Physiology/Medicine in 1937 for his synthesis of vitamin C and the discovery of the components and reactions of the citric acid or Krebs cycle.

Szent-Györgyi's long-ignored work on the electronic conduction in the body provides an understanding of how grounding produces rapid and measurable improvements in whole-body physiology. "In every culture and medical tradition before ours, healing was accomplished by moving energy," he said. "The main actors of life had to be electrons whereas the clumsy and unreactive protein molecules had to be the stage on which the drama of life was enacted."[22]

channels, lightning fast expressways, for highly mobile electrons to move rapidly through the body.

In 2017, Indian yoga and physical sciences scholar T. M. Srinivasan wrote that "this fascinating and insightful statement" was received with skepticism, but in fact, "it presupposed many later discoveries and was thus much ahead of its time." [23]

None of these revolutionary concepts are discussed in conventional medicine. They should be.

How to Get Grounded

For the clinician, grounding offers a simple easy-to-administer modality that can by itself generate a broad range of major healing benefits as well as significantly enhance and accelerate the outcomes of routine treatments.

There are various ways to implement grounding: ➤

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1) Recommend outdoor "barefoot sessions" to patients, weather and conditions permitting. Going barefoot for about 30 or 40 minutes daily can significantly reduce pain and stress.[23] Barefoot grounding outside is free, however, many people will neither have the time nor the inclination to add such a routine into their life. For these and other people interested in pursuing outdoor grounding, conductive footwear is commercially available, such as at www.pluggz.com.
2) Ground patients in the clinic for sessions of a half-hour or more utilizing grounding products such as conductive chairs, mats, and patches. This activity can readily be done in the waiting room as patients are waiting to see the doctor.
3) Once patients experience the effect of grounding, sell them grounding products or direct them to vendors. A variety of grounding systems are available for indoor use while sleeping, working, or relaxing at www.groundtherapycenter.com and earthing.com.

The full story on grounding, the research, and the impact on inflammation can be found in the Earthing book and on the informational website www.earthinginstitute.net.

References

1. Richard Nahin, lead epidemiologist for the National Center for Complementary and Integrative Health, quoted on the 2012 National US National Health Interview Survey (NHIS) on pain conducted by the National Institutes of Health [online]. Available at https://khn.org/news/pain-by-the-numbers/ Accessed August 18, 2018.
2. Szent-Györgyi A. Electronic biology and cancer lecture presented at the Marine Biological Laboratory, July 1972.
3. Goldberg DS, McGee SJ. Pain as a global public health priority. *BMC Public Health*. 2011;11:770.
4. Institute of Medicine (US) Committee on Advancing Pain Research, Care, and Education. Relieving pain in America: a blueprint for transforming prevention, care, education, and research 2011 [online]. Available at https://www.ncbi.nlm.nih.gov/books/NBK92510/#summary.s1 Accessed August 18, 2018.
5. U.S. Department of Health and Human Services. What is the U.S. opioid epidemic? 2018. [online] Available at https://www.hhs.gov/opioids/about-the-epidemic/index.html Accessed August 18, 2018.
6. US State Department. Mobilizing an international response to the opioid crisis: U.S. acts Through the United Nations. 2018. [online]. Available at https://blogs.state.gov/stories/2018/04/19/en/making-progress-vienna-against-crisis-facing-america Accessed August 18, 2018.
7. Mental Health Daily. 15 common causes of suicide: Why do people kill themselves? [online] Available at https://mentalhealthdaily.com/2014/07/23/15-common-causes-of-suicide-why-do-people-kill-themselves/ Accessed August 18, 2018.
8. Sinatra S, et al.. Electric Nutrition: The Surprising Health and Healing Benefits of Biological Grounding (Earthing). *Altern Ther Health Med*. 2017;23(5):8-16.
9. Williams E, Heckman S. The local diurnal variation of cloud electrification and the global diurnal variation of negative charge on the Earth. *J Geophys Res*. 1993; 98(D3):5221-34.
10. Anisimov S, Mareev E, Bakastov S. On the generation and evolution of aeroelectric structures in the surface layer. *J Geophys Res*. 1999;104(D12):14359-67.
11. Chevalier G, et al.. Earthing (Grounding) the human body reduces blood viscosity—a major factor in cardiovascular disease. *J Altern Complement Med*. 2013;19(2):102–110
12. Just A. Return to Nature: The True Natural Method of Healing and Living and The True Salvation of the Soul. New York, B. Lust; 1903: 85-102. Available at http://soilandhealth.org/wp-content/uploads/02/0201hyglibcat/020162.Just.pdf Accessed August 18, 2018.
13. Earthing Institute. Connecting with science. Available at http://www.earthinginstitute.net/research/ Accessed August 18, 2018.
14. Oschman J, Chevalier G, Brown R. The effects of grounding (Earthing) on inflammation, the immune response, wound healing, and prevention and treatment of chronic inflammatory and immune diseases. *J Inflamm Res*. 2015; 8:83–96.
15. Amalu W. Medical Thermography case studies. Unpublished study, available at Earthing Institute: http://162.214.7.219/~earthio0/wp-content/uploads/2016/07/Medical-Thermographics.pdf Accessed August 18, 2018. The value of thermography for identifying sites of inflammation has been documented by countless research studies. Amalu WC, Hobbins WB, Head JF, Elliot, R. Infrared imaging of the breast—an overview. In: Bronzino JD, ed. The Biomedical Engineering Handbook, 3rd ed., Medical Devices and Systems. CRC Press, Baton Rouge. 2006.
16. Brown D, Chevalier G, Hill M. Pilot study on the effect of grounding on delayed-onset muscle soreness. *J Altern Complement Med*. 2010;16(3): 265–273.
17. Brown R, Chevalier G, Hill M. Grounding after moderate eccentric contractions reduces muscle damage. *Open Access J Sports Med*. 2015;5(6):305–317.
18. Passi R, et al. Electrical grounding improves vagal tone in preterm infants. *Neonatology*, 2017;112(2):187-192.
19. Thayer J. Vagal tone and the inflammatory reflex. *Cleve Clin J Med.* 2009;76(suppl 2):S23-S26
20. Schoemaker R, Eisel U. Chapter 5: Cross Talk between brain and inflammation. In: Blankesteijn M, Altara R, eds. *Inflammation in Heart Failure*. Boston, Academic Press; 2015: 81-91.
21. Oschman JL, Chevalier G, Ober AC. Chapter 38: Biophysics of Earthing (Grounding) the human body. In: Rosch P, ed. *Bioelectromagnetic and Subtle Energy Medicine*, 2nd ed. Boca Raton, FL: CRC Press; 2015:427-448.
22. Szent-Gyorgyi A. *The Living State and Cancer*. New York, USA: Marcel Dekker; 1978.
23. Srinivasan TM. Electrons in biology. *Int J Yoga*, 2017;10:113-4.
24. Ober C, Sinatra S, Zucker M. *Earthing*. 2nd ed. Laguna Beach, CA: Basic Health Publications; 2014.

Invitation to Health Professionals

The Earthing Institute would like to introduce health practitioners to the benefits of grounding for personal use and for patients. If interested, please contact the institute at info@earthinginstitute.net to request a free grounding kit consisting of 30 patches and a ground cord. Instructions will be provided. Select patients with significant pain problems, invite them to your office for an experimental, totally non-invasive application of grounding. Sit them in a comfortable chair. Place a grounding patch on the palm of their hand. Make a note of how the patient feels and his/her pain level. Let the person sit and relax for at least 30 minutes. At the end of that time, ask the patient the same questions. Send comments and observations to the same email address.

Experiencing grounding is the only real way to convince a skeptic. If you yourself have pain, try the same experiment yourself. You can do it with Earthing patches or simply sitting/walking barefoot in your patio, yard, park, on any natural surface.

James Oschman, PhD, has researched the science related to the healing benefits of Earthing for 15 years. He was the first to scientifically explain the transfer of free electrons from the Earth's pulsating surface into the electric matrix of the human body. His work explores the existence of a high-speed communication system extending throughout the body that responds to the energetic environment. His investigations, hypotheses, and published papers have given solid scientific basis to a paradigm-shifting health concept. Dr. Oschman is the director of Nature's Own Research Association in Dover, New Hampshire, and the author of *Energy Medicine: The Scientific Basis* (Churchill Livingstone, 2000 and 2016) and *Energy Medicine in Therapeutics and Human Performance* (Butterworth-Heinemann, 2003). Dr. Oschman holds a PhD in biological sciences from the University of Pittsburgh. He has lectured and given workshops on energy medicine in 26 countries.

Stephen Sinatra, MD, FACC (Fellow of the American College of Cardiology), FACN (Fellow of the American College of Nutrition), is a board-certified cardiologist and psychotherapist with more than thirty-five years of experience in helping patients prevent and reverse heart disease. He also is certified in anti-aging medicine and nutrition and is an expert in energy medicine. He is a Fellow of the American College of Cardiology, an Assistant Clinical Professor of Medicine at the University of Connecticut School of Medicine, and a former chief of cardiology and medical education at Manchester (CT) Memorial Hospital. Dr. Sinatra is a co-author of the Earthing book. He has written many other books, including *The Great Cholesterol Myth* (Fair Winds Press, 2012), *Reverse Heart Disease Now* (Wiley, 2008), *Lower Your Blood Pressure in Eight Weeks* (Ballantine Books, 2003), and *The Sinatra Solution: Metabolic Cardiology* (Basic Health Publications, 2008). He is the host of the popular integrative cardiology website www.heartmdinstitute.net.

Gaétan Chevalier, PhD, received his doctorate from the University of Montréal in Atomic Physics and Laser Spectroscopy in 1988, and subsequently participated for four years in nuclear fusion research at UCLA. In 1993, he became director of research and life physics at the California Institute for Human Science (CIHS) and for a decade conducted research on human physiology and electrophysiology. Dr. Chevalier is currently lead faculty at CIHS, visiting scholar in the Department of Family Medicine and Public Health at University of California San Diego. He has been director of the Earthing Institute since 2009 and director of research at Psy-Tek Labs in Encinitas (CA) since 2010.

Wendy Menigoz, DN, is a naprapathic physician specializing in pain management and healing without surgery or injections. She uses a combination of grounding, electrical medicine, lasers, gentle manipulation of connective tissues, botanical, and supplemental medicine to help her patients attain a state of optimal health.

Health writer Martin Zucker has written or co-authored more than a dozen books, including the Earthing book, and written many articles for newspapers and magazines over a 60-year writing career. He is a former Associated Press foreign correspondent in Europe and the Middle East.

Financial Disclosure: James Oschman, Stephen Sinatra, Gaétan Chevalier, and Martin Zucker, are consultants for Earth FX, the company that makes indoor Earthing products. Wendy Menigoz has no connection with Earth FX.

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The Truth About Pain – A Different Paradigm

by Hal S. Blatman, MD

I played golf with sharp and disabling lower back pain for twenty-five years before I learned how to make it go away. Trigger point injections and myofascial work always helped; but when I learned about inflammatory food, there came my first almost pain-free nine holes. Then with platelet-rich plasma, prolotherapy, and repairing tendon injuries, I can hit golf balls as hard as I want with no pain on any swing…unless my food is contaminated with gluten… and then I am in pain for three weeks.

Twenty years ago, I walked off the tennis court with pain in my knees that was bad enough to prevent running and reaching to hit a ball. With what I researched and learned, my bow-legged knees were pain free in six months and without surgery can still ski black diamond mogul slopes and bend to play tennis.

Do you know someone, have a patient, or do you yourself suffer with chronic pain? How many practitioners have been seen, and how many therapies have been tried? Perhaps surgery has been suggested and even already performed.

What do you do if there is a paper cut on your finger and it is bleeding? Options include emergency room for the severity of bleeding, take some ibuprofen and wait until morning, or apply pressure to stop the bleeding. This answer is pretty simple. So what if your back or knee hurt after a game of tennis? Options again include emergency room, taking ibuprofen and waiting until morning, and what if you could apply pressure somewhere and make the pain go away? In actuality, this is more than possible and thoroughly changes how I think about pain and its treatment.

One of the unfortunate phenomena in medicine is that the doctor recommending your treatment, and perhaps even surgery, has likely never really touched you. A pain patient's examination and recommendations are typically based on X-ray, CT scan, MRI scan, and perhaps other diagnostic studies.

Indeed, finding these clues of what causes pain requires a different kind of physical examination than what doctors and health care providers are usually taught. It's not the stethoscope, x-ray, MRI, or pin prick test, but rather a gentle and specific touch that provides many of the necessary clues.

How can we discover the location of these important clues to a lifetime of pain-causing injuries?

Pain educators discuss a familiar theme with regard to what is called chronic and intractable pain. Practitioners and the public have been taught that acute pain comes from injury, and that if this pain persists longer than three-to-six months it becomes "chronic pain" and then it is unlikely to ever go away. Current medical treatment of chronic pain then becomes variations of making the nervous and immune systems less active. Among other choices, this can be accomplished with medications such as cortisone, gabapentin, and opiates, electrically with TENS and spinal cord stimulators, and surgically with radio-frequency and other nerve ablation procedures.

Pain education also teaches that nociceptive and neuropathic pain are distinguishable by the quality of pain symptoms. This doctrine ascribes different pathology to sensations of burning, numbness, aching, and stabbing. In addition, it is suggested that these various sensations of pain might be more effectively treated with different modalities and by different medications, or even that some are not treatable by one type of medication or another. Symptoms are presumed to be indicators of origin, ascribing specific etiology for burning, tingling, sharp, dull, achy, and more. Practitioners spend a lot of time documenting the nuances of sensation because they have been taught that this is of diagnostic significance.

These theories of pain biology and physiology have a foundation in spinal anatomy, knowledge of dermatomes, joint dysfunction, and understanding of nervous system plasticity and windup or up-regulation. All these ideas have been substantiated by anatomical study.

While the anatomy behind pain theory based on current understanding of neuropathic and nociceptive pain is not disputed here, many of the conclusions that traditionally follow are based on assumptions that may not be correct.

Janet Travell, MD, seemed to understand that a great preponderance of what we perceive as pain originates in fascia. She described myofascial trigger points in fascia causing sensations of discomfort that vary to include numbness, tingling, burning, and pain.[1]

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Truth About Pain

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A new understanding of anatomy and fascia based on the work of van Der Was J (2009),[2] Langevin et al (2009),[3] Schleip,[4] and others leads to new ways to work with healing chronic pain.

Review of Anatomy

Anatomy and physiology teach that feedback to the central nervous system comes largely from Golgi tendon organs, Pacinian corpuscles, and Ruffini nerve endings. Anatomical studies have supported this teaching to students of medical physiology for many years. While these mechanoreceptors are important, anatomically they represent only 20% of afferent information to the brain. Approximately 80% of afferent information about our periphery comes from free nerve endings that terminate between the cords and fibrils of fascia throughout the body. These are small diameter interstitial muscle/fascia receptors, 90% of which are unmyelinated free nerve endings. The majority of these are for mechanical tension and pressure.[5] This would include muscle, organs, and all of what is considered "soft tissue." Some of these nerve endings are for chemo and thermo reception, but the vast majority measure pressure and friction (shear forces). Research has shown that it is these nerve endings that originate much of the input from which we interpret both proprioception and myofascial pain. Indeed, the interaction of these nerve endings and fascia becomes the antenna for our brain to understand its periphery.

The significance of this anatomy is that the vast majority of afferent information to the brain is providing feedback about pressure and sheer force within the collagen fibrils of fascia. This would include tendon, ligament, enthesis, muscle, and even the bladder wall. As an example, as the bladder

Case Report

Patient XX is a 62-year-old woman who presented on June 17 with a history of scoliosis and pain in her neck, back, hip, and leg on the right side. She had felt a pulling sensation in her psoas muscle during yoga about one year prior, and then again while doing a Rumba dance about five weeks prior to this office visit. She had one acupuncture treatment and then more recent activities with her grandchildren greatly aggravated her symptoms.

Health care professionals have been taught to think this pain could likely be related to her history of scoliosis and x-ray findings of degenerative lumbar facet changes.

Her presenting pain pattern is illustrated in Figure 1.

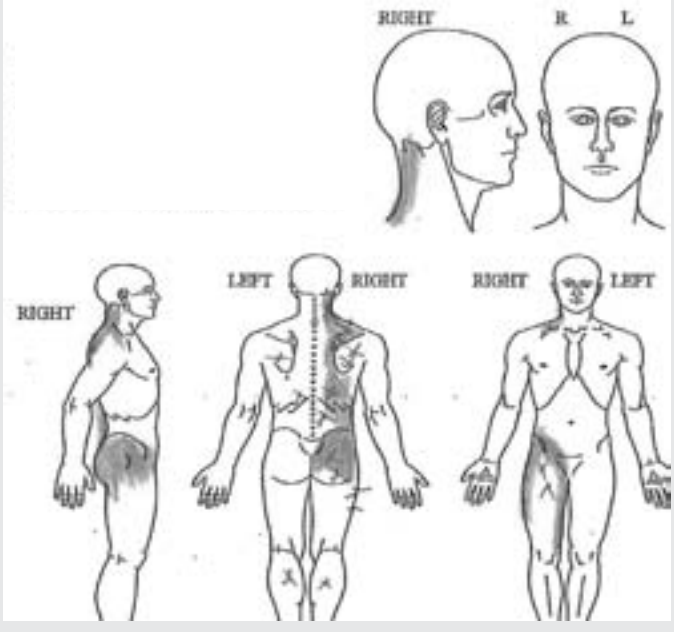

Figure 1. Shading shows pain all along the right side of her body, neck to lower back and into her right groin and thigh. The x's in the diagram represent the most active of the fascia knots or trigger points in her myofascia. Short horizontal lines represent some of the tendon or enthesis injury detectable on physical examination by noting texture of myofascia.

With only myofascial release, use of rubber ball massage techniques as described in *Winners' Guide to Pain Relief*, and nutritional changes her condition improved and she presented on July 2 with the pain pattern illustrated in Figure 2. This is representative of improvement in most all chronic pain patients four weeks after myofascial work with rubber ball, and a gluten free non-inflammatory diet. Even before injection or needling therapies, simple food changes and self massage techniques have already made a significant difference.

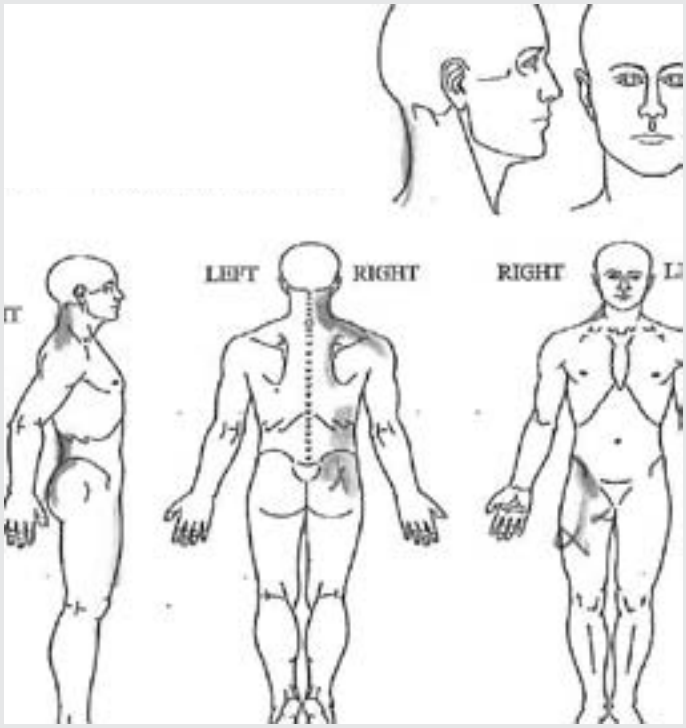

Figure 2. Shading showing less pain and x's represent the most significant tenderness and also the locations of trigger point injections.

Working with the five rules of the Blatman Method of Pain CSI, trigger point injections resulted in significant and rapid improvement demonstrated by the pain diagram colored on July 12, see Figure 3.

distends, the fascia and bladder wall also become thinner. These interstitial nerve endings interpret this pressure change and shear of expansion as "I have to pee," or perhaps the pain of what we call "interstitial cystitis." The balance of homeostasis is part of what keeps our nervous system thinking urination vs urinalysis and antibiotics.

As an orthopedic surgery resident in 1980 we were taught that proprioception of joint position came primarily from "goniometer nerves" in the joint. We know now that this is not true, and that instead these free nerve endings in fascia provide the input that becomes proprioception. We also know that receptors in skin are more important than receptors in joints. When a joint moves, information about this movement comes from fascia shear being different on the extensor and flexor sides of the joint. As we mature from infancy through our early years, our brain learns how to integrate this information and provide the data for understanding where we are in space.

Many people speak about a concept called muscle memory. In actuality, muscles are not capable of memory, and don't remember anything. They are simply bound muscle cells that only have the ability to turn on and turn off. Instead, it is fascia holding these cells together that remembers everything. Some feel that fascia remembers every bump and twist a body ever takes. Therapists speak of somato-emotional release as a phenomenon where fascia releases and the emotions, tied to the trauma, release simultaneously with pain. A close relative of this are the theories and concepts of "interoception." Much of the CNS neuro-input from these free nerve endings in fascia terminates in the posterior insula of the brain before reaching the cortex. This primate-only area of brain anatomy integrates emotion into our perception and reality.[6] Perhaps we know how we feel about being injured even before we recognize what happened.

With consistency we observe acute injury causes acute pain that can lead to chronic pain. Statistics on resolving chronic pain show that if acute pain is not resolved by three to six months after injury, it becomes chronic pain that can likely never go away. We are also taught that our bodies become tolerant to opiate medication and doses might need to be increased over time. While these ideas represent the reality of current medical understanding, they are not the reality of our biology. While

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Figure 3 shows continued dramatic improvement with each treatment. And then after more of the same treatment Figure 4 is from August 16.

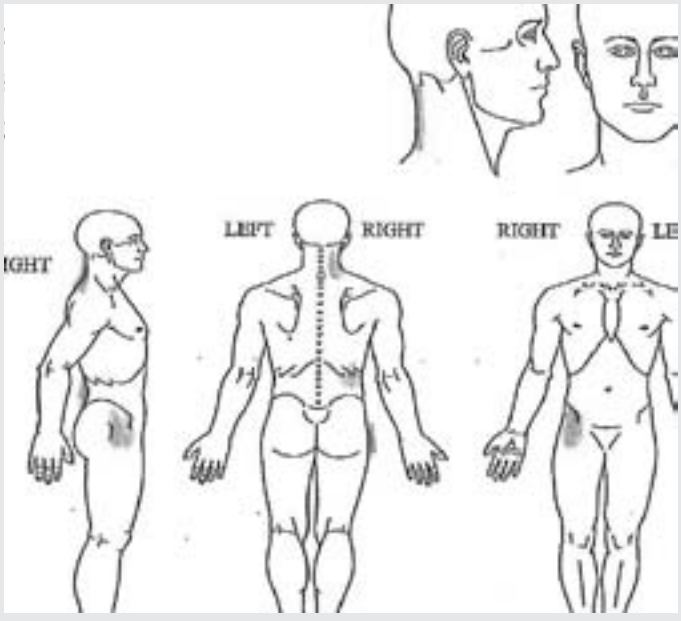
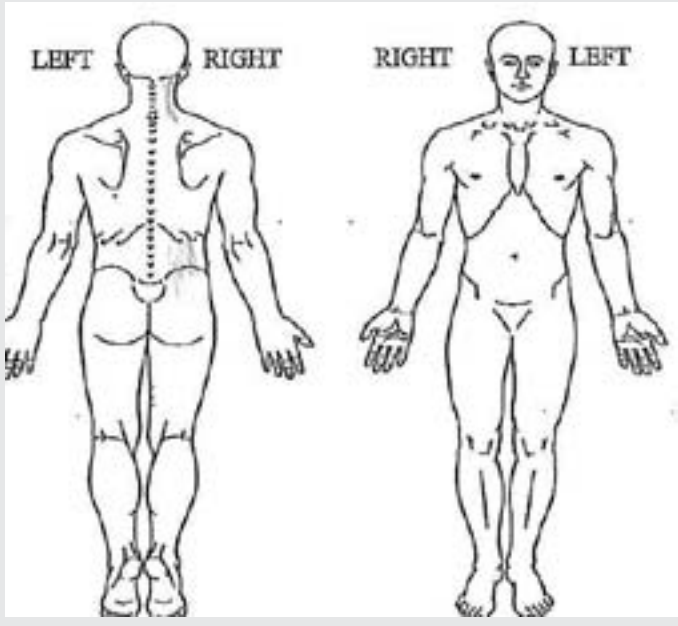


Figure 4. She is mostly pain free and has returned to her most important physical activities.



Summary

This patient presented with disabling pain involving the right side of her body from neck to thigh. She had seen another physician, experienced some acupuncture, and had an MRI scan of her lower back. The MRI scan illustrated scoliosis and arthritic changes that included facet arthropathy L2-S1, disc space narrowing at multiple levels in conjunction with mild osteophytic spurring, disc space narrowing at L5-S1, and mild degenerative endplate changes.

This patient's diagnosis of myofascial injury was made by careful and very specific physical examination of muscle and fascia. Treatment was directed toward helping her body recover from the injuries this examination detected, and also by reducing the fascial inflammation in her body resultant from food and perhaps environmental toxic exposures.

Patient XX was an ideal person for healing from this pain. She took all suggestions seriously, and followed all directions completely. Gluten- and dairy-free choices were absolute. Without inflammation from food and environmental toxicity, treatment acording to this paradigm of discovering and helping to heal the fascia injuries of a life time, pain can be relieved as quickly as the body can heal.

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acute pain may lead to chronic pain, this chronicity only continues until the injuries that caused it are found and healed. The months or years spent in pain do not matter as much as we might think. In fact, much of the paradigm of how pain is considered, examined, and treated today does not work as well as it should if it were correct. If it were correct, wouldn't treatment be more successful? Don't doctors say they will try this, and if it does not work then try that, and so on? Perhaps figuring out the answer shouldn't take so many tries if our understanding is mostly correct.

Injuries that result in chronic pain are usually many years old and started in childhood. It is not lifting the box that started what is causing the lower back pain. It is likely to be old injuries that weakened the fascia which gave way during the lifting injury resulting in years of pain. Then the pain results when the tissue becomes even more fragile and injured. In our experience, seldom is chronic pain truly intractable. Instead, with finding and helping the body to heal from these old and new injuries, significant levels of pain can indeed be made to go away much of the time.

While theories of acute and chronic pain, inflammation, nociceptive and neuropathic pain, electric stimulator modulation, and pharmaceutical interventions have their place, our research shows that much of this is not our biologic reality.

When a patient presents asking for evaluation of pain, the practitioner is being asked to play CSI for pain. A diagnostic medical "who done it."

In diagnosing and treating chronic pain, our research has led to conclusions that form the basis of the Blatman Method-Five Rules of Pain CSI®:

1. You, as the patient, cannot believe the pain you experience comes from where you feel it.
2. You also cannot believe what you think the pain feels like, and the distinction is not diagnostically important.
3. The most significant thing you can believe is that where you are specifically tender, mm by mm, is where your fascia is tied in a knot, or where your fascia attaches to you, holds you together and is injured.
4. The specific sites where you are most tender are the locations of pain generators in your fascia that generate most of the pain you feel.
5. If you can get your body to heal the specific places that are this tender, a large amount of the pain you experience will go away.

Amazingly, as resistance and allegiance to what we have been taught will draw you away from these rules, results of following them lead to amazingly consistent results and help answer questions from years of practice. And fortunately, this paradigm applies to healing from most pain in the body – most of the time.

Some of the various pain conditions where this directly applies include migraine and headache, neck and shoulder pain, arthritis and joint pain, lower back pain, leg and foot pain, interstitial cystitis, pelvic pain, plantar fasciitis, TMJ syndrome, and fibromyalgia. It also applies to muscle and ligament strains and sprains from sporting injuries. Indeed, condition of fascia is at the core of most injury, at the core of most pain issues, and at the core of orchestration of real healing. Not just physical, but also emotional as referred to by interoception.

Let's discuss each of the five rules. Referring to Rule 1, you cannot believe the pain comes from where you feel it. Headaches do not come from your head. The pain in your left arm could be from your heart attack. You as the patient have little idea and know only that the pain is in your head or arm. Similarly, why do you think that knee pain comes from the knee, or low back pain comes from the lower back, or even that foot pain comes from the foot or heel spur. One of the more impressive examples is the person who has had total knee replacement surgery, and still suffers perceiving pain in the replaced knee joint. Indeed, pain attributed to a joint may not be coming from the joint itself but rather from the myofascia that holds the joint together and makes it move.

Referring to Rule 2, it is not so important what you think the pain feels like. This issue has been an amazing education. It started with Dr. Travell teaching that myofascial trigger points caused sensations of radiating numbness, tingling, aching, cramping, and pain. During examination and pushing on trigger points to impress a patient these ideas, often the radiating pain would be a mixed sensation of numbness, burning, and pain. This may be why some pain symptoms are so difficult to describe. Keeping my personal faith in helping the body heal the most tender of its fascia injuries, I utilized platelet rich plasma injection therapy to treat injured gluteal tendons in a chronic low back pain patient. This man had a history of lumbar fusion surgery 10 years prior and suffered persistent pain and also numbness to the bottoms of his feet. Upon return a month after his procedure, he reported that since two days afterwards and for the first time in 10 years, he had been able to feel his dog lick the bottoms of his feet. Doesn't this mean that numbness does not have to originate in spine and nerve pathology? Numbness and tingling are consistent phenomena that are not explained by nerve, dermatome, and spine theories of pain. They are best understood as symptoms of fascia injury and repair.

Referring to Rule 3, if you cannot believe where you hurt or where the pain comes from, this rule is about what you can really and truly believe. Indeed, the only thing you can believe as a patient is that where you are specifically tender, mm by mm, is where the fascia strings and cords that attach to you and hold you together are either tied in a knot or they are injured.

Referring to Rule 4, the specific places where your body and fascia are most tender usually relate to the most significant of the injuries causing the pain symptoms that are more likely to attract your attention. It's fascinating that this seems to be true no matter what turns out to be your pain issues of affliction – from headache to foot pain and all areas in between. Examine very carefully and trust what is tender.

Referring to Rule 5, when you can get your body to heal from the

injuries discovered during the physical examination of Rule 3, you will find the pain from Rule 1 will mostly or possibly even completely go away. This means that coping skills, medications, epidural steroids, nerve blocks, neuro-ablative procedures and more might not be so necessary if we could only make the pain go away nearly all of the time. And indeed, there is a path which you can work to make this happen.

One of the issues of treatment for chronic pain is that the practitioner or doctor prescribing your medication and surgery has likely never really touched you. Your chiropractor has to some extent, massage therapist has perhaps more, but who else? Success from this work and understanding of injury and pain depends on knowing a touch that is not taught in medical school. And then, an understanding of what that touch means to healing injury and resolving pain.

What about treatment? Besides basic stretching, has anyone taught you how to work on and change the "kinks" in your myofascia? And are you doing this a few times each day?

Every muscle and fascia injury has three physical engineering issues. First there are injuries where the fascia weaves to the periosteum weakening the attachments that anchor muscle. These injuries can also be anywhere along the fascia cords between anchor (enthesis) and trigger point. Second, there are the actual places where the fascia cords and muscle cells are wound into the trigger point. This actual coil is not only tender when palpated, it is directly responsible for much of the tightening that causes the ropey bands and is also responsible for generating much of the noticed discomfort or pain as it applies pressure to the interstitial nerve endings. Lastly, there is the ropey band. The significance of the ropey band is that it has to impede blood flow. This will mean the muscle will then necessarily start to burn fuel anaerobically long before it normally should. At this point, continuing to use the muscle will increase formation of lactic acid as ATP is made. The consequence is that with more use of tight muscles, the more a person will have to massage or use their foam roller to squeeze metabolic exhaust from the ropes just to keep up. See Figure 5.

Trigger points and fascia kinks need to be smoothed out so the nerve endings in-between the fascia cords stop being squeezed and causing symptoms. Sometimes the injured enthesis and fibers in the muscle cord require repair so that muscle pull can be more solid without recurrence of the kinks (trigger points).

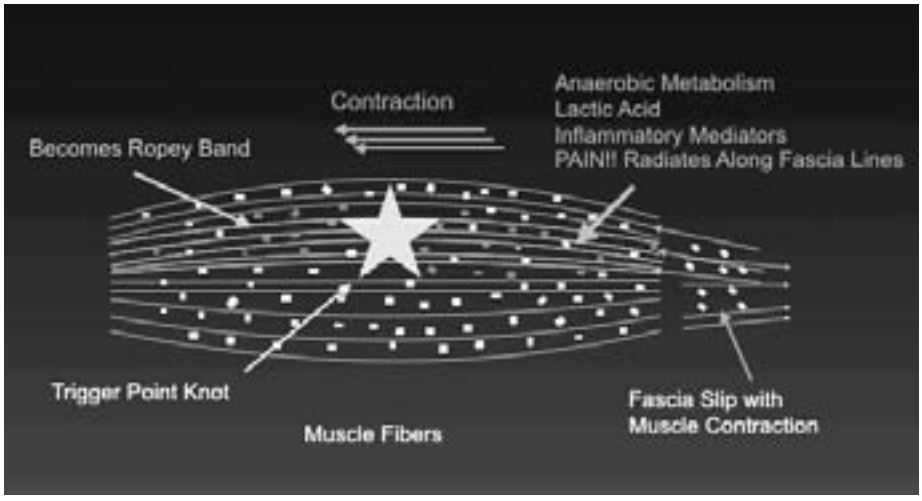

Figure 5. Fascia slip leads to formation of trigger point and ropey band, followed by anaerobic metabolism and pain. Dots are interstitial nerves, transmitting unpleasant sensations.

For more than 25 years I have taught about massaging trigger points and fascia with a rubber ball. This ball can reduce concentration of metabolic toxicity within a muscle, and also help untangle the wound up knots of fascia called trigger points. Fascia-based pain patterns from these knots are illustrated along with rubber ball massage and stretching techniques in my book, *Winners' Guide to Pain Relief*, Danua Press.

Trigger point injections and dry needling induce the fascia knots to directly unwind. Discomfort from this treatment is from the free nerve endings sensing the ripple along the fascia that results from the release. Afterwards the person will likely feel soreness of a muscle that finally has a chance to relax after too much exercise.

What about joint pain? Doesn't it come from arthritis? Many are advised that their bone on bone joint will require replacement surgery. Orthopedic texts state that we are born with cartilage to wear out and when this happens our joints require replacement. In a body that grows a new gut lining every three days, new skin every 7-10 days, and even new brain cells, it does not make sense that our body cannot repair cartilage from daily wear and tear. A closer truth is that we regrow cartilage in every joint in our body every minute of every day, and there are alternatives to joint replacement surgery.

One of the first questions to ask is about how well the joint still moves. If you can fully straighten your knee and also bend it 100°, there is no possible way this joint is bone on bone. Moreover, the joint has enough cartilage remaining to not only move, but also there is a good chance of regenerating and avoiding replacement surgery.

There are surgeons who call joints bone on bone to persuade patients to proceed with replacement surgery. Some x-rays I have seen in second opinion consultation have more joint space than mine. Even when cartilage is very thin and the x-ray may look like bones are very close together, it only takes two to three cell layers of cartilage for a joint to move. Seeing cells requires a microscope, and this thin layer cannot be seen by x-ray.

What then of the pain? Again, much of our pain comes from injury demarcated by where the fascia is

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tender. With regard to knees, nearly all people have tender injuries in their pes anserine tendons and the insertions of distal vastus medialis muscles. Not only do these patients need to regenerate cartilage in their joints, these fascia injuries also need repair. And it is often injury to these structures that is the basis for chronic knee pain after joint replacement surgery.

What about food and its effect on fascia and pain? Of all therapeutic challenges, this simple issue is one of the more complicated to work with and motivate people for change. Many of the answers however, are much more straight forward.

When injury occurs at the enthesis and throughout the muscle as fascia cords get stretched and torn, inflammatory mediators are released. It has been shown that 90 seconds of osteopathic touch can change this chemistry and reduce the inflammatory soup in the local tissue.[7]

In a similar fashion, exposure to inflammatory food also increases the release of inflammatory mediators by the fibroblast diffusely and throughout the body.[8] In the central nervous system this has been shown to increase cerebral injury.[9] In the body this fascia inflammatory response increases pain.

Where pain comes from interstitial nerves reacting to injuries in fascia, in my experience inflammation from food and environmental toxicity makes these injuries light up like a holiday tree for days to weeks. According to our research, being able to sense pain from weather and barometric change implies a fascia-wide level of inflammation caused by some ingested food during the previous six weeks. The corollary is that in the absence of any food inflammatory to your body through six weeks, most likely you will not feel "rain pain," or it will be much lighter than expected and you are looking to discover another sensitivity.

Of equal significance, if the fibers of a ropey band can be separated by a treatment, they will stick back together by the inflammation from food. Indeed, success of myofascial treatment is intimately tied to nutrition and environmental toxicity.

There are many practitioners and treatments for chronic issues. Many are helpful to people who suffer and much has been written. Common denominators of successful treatments can often be found in fascia and nutrition.

There are many diets and nutritional philosophies that have been helpful for those with chronic issues. In figuring this out, it is helpful to know our body speaks with a common and particular language. If one wakes in the morning with pain not present the night before, and there was no intervening injury, a highly likely cause of this increased pain is inflammation from food ingested the evening before. A stiff neck does not come from the window, and it is unlikely for anyone without Ehlers-Danlos syndromes to sleep that wrong. It is more likely the sudden pain issue came from last night's pizza and a high dose of inflammatory bread flour and dairy. Similarly, pain in the evening may have come from breakfast or lunch.

At heart to the issues of chronic pain is that current treatment does not work very well. In addition, reliance on opiates and other medications has not proven to be such a good option. Surgery remains controversial, with success and failure less than predictable. And pain treatment is often based on epidural steroids and ablative procedures that may be harmful.

Alternative medicine pain clinics offer acupuncture, mind-body-spirit, herbal medicine, and training in coping skills. This article discusses a different paradigm…that of finding and healing the injuries and watching the pain go away. Really, please, why don't we learn to just make it go away!

In my experience after 30 years of research, pain is not what we are taught. It is not about inflammation, disc, spine, or even joint. Indeed, all of this can be in the mix, but the predominant injuries are to the fascia that holds our bodies together. The very tissue we were taught to discard during anatomy and also surgery is more important than ever imagined.

The miracles of healing bring us the ability to repair from old injuries and also to regrow worn cartilage in our joints. Many of us have patients who are living proof. No one should be led to think their cause is hopeless. So many people who suffer with chronic pain can be helped to function better and with much less discomfort.

To feel better and better, locate and help heal the pain generators caused through time, stop all ingestion of inflammatory food, and then consider your next steps. Practitioners of regenerative medicine, detoxification, ozone therapy, nutrition and myofascial pain may be a good choice for information and help.

If you are a practitioner, learning new ways to consider common problems of pain will help you be more able to help people with frustrating issues where there are otherwise too few good options.

Hal S. Blatman, MD, is the founder and medical director of the Blatman Health and Wellness Center in Cincinnati, Ohio, a nationally recognized specialist in myofascial pain, and co-author of *The Art of Body Maintenance: Winners' Guide to Pain Relief*, a reference for treating myofascial pain, from migraine headaches to plantar fascitis. He is credentialed in pain management, occupational and environmental medicine, and integrative holistic medicine, and also trained in craniosacral therapy and Healing Touch. After receiving his medical degree from the Medical College of Pennsylvania in 1980, Dr. Blatman completed two years of training in orthopedic surgery. He later studied ergonomics and toxicology during his residency in occupational and environmental medicine at the University of Cincinnati Hospital. In the early 1990's, he studied with the late Dr. Janet Travell, a pain physician to President Kennedy. Dr. Blatman currently leads a team that specializes in the holistic and comprehensive rehabilitation and treatment of pain, ligament and tendon injury, fibromyalgia, and chronic fatigue syndrome. He is a past president of the American Holistic Medical Association, with offices also in Manhattan and Seattle.

References

1. Simons D, Travell J. *Myofascial Pain and Dysfunction: The Trigger Point Manual*, vol 1. 2nd ed, Lippincott Williams & Wilkins, 1999.
2. van der Wal J. The architecture of the connective tissue in the musculoskeletal system – an often overlooked functional parameter as to proprioception in the locomotor apparatus. *Int J Ther Massage Bodywork*. Dec 2009; 2(4) -23.
3. Langevin et al. Fibroblasts form a body-wide cellular network. *Histochem Cell Biol*. July 2004; 122(1)7-15.
4. Schleip et al. Fascia is able to contact in a smooth muscle-like manner and thereby influence musculoskeletal mechanics. *J Biomech*. 2006;39 (Supplement 1):S488.
5. Mitchell & Schmitt. Cardiovascular reflex control by afferent fibers from skeletal muscle receptors, In: Shepherd JT et al. (eds), *Handbook of Physiology*, Sect. 2, Vol III, 1977.
6. Berlucci G, Aglioti S. The body in the brain revisited, *Exp Brain Res*. January 2010;200(1);25-25.
7. Standley, Meltzer, *J Body Mov Ther.* July 2008; 12(3):201-3.
8. Pillon N et al., Muscle cells challenged with saturated fatty acids out an autonomous inflammatory response that activates macrophages. *Cell Communication and Signaling*. 2012;10:30.
9. Perlmutter D. *Grain Brain*. Little Brown and Company, 2013.

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Fibromyalgia or Something Else?

review by Katherine Duff

Fibro Fix: Get to the Root of Your Fibromyalgia and Start Reversing Your Chronic Pain and Fatigue in 21 Days, by David Brady, ND
Rodale Books, 733 Third Avenue, New York, NY 10017
©2016; 278 pages; softcover; $16.99

This difficult combination of fatigue and body-wide chronic pain (often called fibromyalgia or FM) remains mysterious and confusing to many people and their doctors.

Is it fibromyalgia or another chronic pain syndrome? It may take falling into a web of confusion before that question can be answered. David Brady, ND, who has dedicated much of his career to understanding fibromyalgia clears away much of that confusion in his book, *The Fibro Fix*.

How physicians and patients view fibromyalgia at this time is all over the map. The diagnostic criteria are changing as more is known, but many physicians have not caught up. Most are familiar with the scoring system that qualifies a person as having fibromyalgia when there are at least eleven out of eighteen tender points and pain above and below the waist on both sides of the body. Brady informs us that these were criteria established for use in research, not diagnostic purposes. The problem with using this as a diagnostic tool is that it fails to eliminate any other pain disorders and does not truly pinpoint the classic fibromyalgia diagnosis. This may account for the statistic that only 34% of fibromyalgia diagnoses are accurate.

There was some improvement when the American College of Rheumatology revised the diagnostic criteria in 2011. Patients' responses on questionnaires about pain and other symptoms now guide the diagnosis. But pain can be a result of many other conditions, and Brady advocates thorough hands-on exams to rule them out. Without such examination, the patient stands a good chance of being misdiagnosed and fibromyalgia over-diagnosed. Brady advises a thorough history, comprehensive physical exam, and both standard and functional lab tests before diagnosis. Without the thorough exam, one might miss other conditions that can mimic fibromyalgia such as hypothyroidism, autoimmune diseases, and anemia, to name a few. Fibromyalgia is different in that it is a dysfunction of the central nervous system and the way it processes pain.

By the end of the first chapter, the author directs the reader to his Fibro-Fix Foundational Plan no matter what pain syndrome may be present – there is no need to wait for the thorough diagnosis. Brady has devised a three-week plan that includes an anti-inflammatory diet, a toxin-lowering lifestyle, and movement and relaxation. Brady is selling a detox shake and packets of supplements for the diet but purchasing them is not necessary. He includes a list of the ingredients for the shakes and names the supplements.

Other dietary instructions call for elimination of sugar, gluten, alcohol, and dairy for the duration of the diet. High-quality proteins from fish and chicken are essential for the detox process. We learn that toxins bind to other chemical compounds, or conjugators, to be carried out of the body. The most effective of these are sulfur-containing amino acids, which come from proteins. Red and green foods are also included to act as antioxidants for the initial breakdown of the toxins.

Recommendations for the toxin-lowering lifestyle are a bit short in the avoidance category but included are ideas to assist the body in detoxing, such as Epsom salt baths and filtered water. It is too bad, though, that Brady did not include more information about the many toxic exposures inside and outside the home that could be avoided or eliminated. There is a list of these in a later chapter which is concerned with functional issues in a discussion of multiple chemical sensitivities.

The movement and relaxation part of the plan takes into account the fact that patients are in pain. The exercises are gentle and are intended to increase blood flow. This in turn allows for better results with muscle relaxation exercises that are needed to relieve the muscle tension that occurs when someone is in pain. Guided imagery instructions are included with the goal of reconnecting with inner calm, or one's well self.

This book will assist the reader in identifying whether it is classic fibromyalgia they are suffering from or a condition found in three other categories: musculoskeletal issues; functional/metabolic problems; or conventional medical diseases. The author refers to these as "buckets." He includes questionnaires, descriptions, and tests to help the reader determine if they may indeed be suffering with a problem that falls into one of the bucket categories. If that is the case, there are recommendations for testing and illustrative patient case studies.

The chapter for functional disorders addresses the symptoms that many physicians find confounding. A doctor trained in functional medicine will be able to parse out the vague symptoms such as fatigue, difficulty concentrating, food sensitivities, intestinal distress, and more, with an eye toward suboptimal functioning of a metabolic process or other system. Here we find discussions of subtle thyroid problems, mitochondrial dysfunction, and more. Left untreated the suboptimal in time can become disease.

The cause of fibromyalgia is not known, but Brady offers his best estimate of cause. He attributes early childhood abuse or trauma as the root cause. The developing nervous system in a child may react to such stresses by over responding to stimuli, which can cause nerve signals to spill over onto other neurons therefore widening the receptive fields of pain. Once set up for hypersensitivity, a trigger later in life will then misinterpret stimuli as pain. He discusses the role of serotonin, which is found to be low in fibromyalgia patients, and the neuromodulator substance P, which is elevated. It is not clear in the book if the childhood trauma explanation he describes is the result of consensus though.

As someone who has not had to face the maze one must go through with a suspected diagnosis of fibromyalgia, I found this book eye opening. There is so much information to help those with fibromyalgia and other conditions as well. It would certainly be a helpful tool for physicians who are trying to help their patients.

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Amino Acid Treatment for Addictions

review by William L. Wilson, MD

The Craving Cure: Identify Your Craving Type to Activate Your Natural Appetite Control by Julia Ross
Flatiron Books: https://us.macmillan.com/Flatiron-books
Hardback; c. 2017; 432 pp; $27.99

As a family physician with over 40 years of clinical experience in the trenches, I've always needed to look for ways to help my patients improve their brain function. Some of my patients have had significant psychiatric disorders such as major depression or bipolar disorder. Most, though, have had common mild to moderate depression, anxiety, food craving, fibromyalgia, PTSD, ADHD, and similar brain-generated conditions. By 1987, when Prozac was introduced, these problems had begun to mushroom, but mainline medicine had few arrows in its quiver. That's why GPs quickly became such big SSRI prescribers.

Before that, I recall having read the work of neuroscientists Judith and Richard Wurtman at MIT who were studying the precursor amino acids L-tryptophan and L-tyrosine which were needed to make the brain's appetite- and mood-regulating neurotransmitters serotonin, dopamine, and norepinephrine. I found their work interesting, but, at the time, I couldn't see how their research could be applied to the patients in my practice. That suddenly changed when I read *The Diet Cure* by Julia Ross. In it I found practical recommendations for the use of the precursor aminos and others, such as GABA and D-phenylalanine, to correct the same set of brain-generated symptoms that I was so often unsuccessfully trying to manage. I soon started using the aminos in my practice – with remarkable results.

Since then, it's become clear to me that our modern diet, loaded with highly processed sweets and starches, is playing the central role in the multiple pathologies, both mental and physical that most of my patients are experiencing. I've developed a disease concept to describe it which I call Carbohydrate Associated Reversible Brain syndrome or CARB syndrome. Of all the symptoms of CARB syndrome, it's the *cravings* for highly-processed carbohydrates that are driving the bus. But amino acid therapy has made it possible for thousands of my patients to stop those cravings and comply with healthy diet recommendations. As a result, they not only lose their cravings, negative moods, and other brain-dysfunction symptoms; they also lose stored fat - with minimal or no loss of lean body mass. In addition, their blood pressure, liver function, blood glucose and insulin functions, and other now-common diet-related conditions markedly improve. Amino therapy *is a miracle cure!*

Over the past several decades, amino acids have become the core of treatment for at least 75 percent of my patients. That includes some very challenging patients for whom I initially combine low doses of medications like Prozac or lithium with the amino acids. After a month or two, when they're consistently eating well and clearly heading down the road to optimal health, I taper many of them off the medications, but safely continue them on the amino acids.

The Craving Cure is Julia Ross' third important book on the use of supplemental amino acids to re-establish normal brain function in individuals who have been severely compromised by highly processed food. In keeping with the now-epidemic and world-wide nature of today's diet-associated problems, Julia's book is much more detailed in its therapeutic suggestions, in its references, and in its scope than either of her prior books. For example, its section on the brain and amino acid therapy is almost two hundred pages long (*The Diet Cure's* section was thirty pages long.)

The book's first few chapters track the tortured trail of health destruction orchestrated by food science: the encroachment, since the 1970s, of new sugars, new starches, too little protein, and more harmful fats on our collective diet. Manufacturing damaging food is one thing. Getting us to eat it is the real accomplishment. With her extensive background directing addiction treatment programs, Julia is in an excellent position to help us understand how we've become so addicted to the new ultra-processed foods. She reveals how their carefully combined components, including sucrose, fructose, chocolate, caffeine, refined grains, and even a few nutrient-dense foods like milk products can light up the brain's primary pleasure centers. Her section on cannabis as an addictive food additive is particularly enlightening.

The regular consumption of these products disrupts the function of our brain's major appetite-regulating messengers, the neurotransmitters serotonin, endorphin, GABA, and dopamine, as well as its blood glucose supply. Depending on which functions are affected, individuals tend to develop very specific types of symptoms and craving patterns. The book's five-part symptom questionnaire, which is the version currently being used at Ross' clinic, has a simple 0-10 scoring system that allows patients to characterize their own unique types of craving. The resulting profiles clearly indicate which specific amino acids will be needed initially and allow us to track progress and adjust dosing as needed over time.

The amino acid therapy section starts with general guidelines for using the aminos as well as some general precautions to be aware of. It then goes into the details of actually treating each of the five specific Craving Types: choosing, trialing, dosing, adjusting, and terminating. This clearly addresses controversies raised by less experienced amino acid therapy promotors such as whether GABA works as a supplement or whether 5-HTP and tyrosine have to be taken together in a rigid ratio.

All clinicians can easily follow Ross' guidelines. They can also recommend the book to patients for all the reasons I've just given as well as for its thoughtful suggestions on how to identify and tailor a diet that can support healthy brain and body function (no easy task amidst all the current competing theories).

Julia Ross has hit another home run with *The Craving Cure*. I believe that this book can lead to revolutionary improvements in our management of the many disorders that are now so resistant to the approaches of both conventional and functional medicine.

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Chronic Fatigue Syndrome and Myalgic Encephalitis: It's Mitochondria, Not Hypochondria

by Dr. Sarah Myhill, MB, BS

Dr. Sarah Myhill, a veteran clinical physician based in the UK, is the author of *Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis* (Chelsea Green Publishing, 2018). In this book, Dr. Myhill examines the essential role of our mitochondria and why it is key to understanding and overcoming chronic fatigue syndrome (CFS) and the inflammation that often accompanies it: myalgic encephalitis (ME). She reviews the new research and clinical findings on this debilitating disease and includes insights on why CFS/ME is the most poorly treated condition in Western medicine, the role of the gut, the causes of inflammation, how to reprogram the immune system, and more. The following excerpt is adapted from her book, *Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis* and is reprinted with permission from the publisher.

A more detailed look at the biochemistry of mitochondria explains a number of the symptoms of CFS/ME. It is important to emphasize that in the early stages of mitochondrial failure, the mitochondria look normal; for this reason, a muscle biopsy to look at mitochondria in CFS is rarely helpful. It is a bit like having a car with a spark plug that does not work – an MRI scan of a car would come back completely normal, but if you tried to start it, nothing would work. Two key symptoms in patients with CFS/ME which I believe reflect mitochondrial dysfunction are:

- **Very poor stamina, both mental and physical.** The patient can function, but only for a few seconds before tiring. This is due to slow recycling of ATP.
- **Delayed fatigue, mental and physical.** Symptoms persist for 24 to 96 hours if these patients overdo things. When mitochondria are stressed, all the energy molecules (ATP, ADP, and AMP) are drained out and cells must wait one to four days for new energy molecules to be made, via the pentose phosphate shunt.

Energy Production in the Mitochondria

Energy production starts with fuel in the bloodstream, which can come to the cells in several forms, listed in form of possible order of preference (metabolic ease):

- **Ketone bodies.** Produced by the burning of medium-chain fats, such as coconut oil, chocolate fat, butter, animal fats, and our own fat deposits
- **Glucose.** Released directly from the gut when the liver is overwhelmed, as happens when too much sugar is consumed or absorbed in the mouth, bypassing the liver
- **Short-chain fatty acids.** Derived from the fermentation of vegetable fiber by friendly bacteroides in the colon
- **Pyruvate.** Results when lactic acid is recycled via the Cori cycle, following an episode of anaerobic metabolism
- **Glucose in the liver and muscle.** Released directly from glycogen stores
- **Glucose from protein stores in the liver.** Produced via gluconeogenesis
- **Long-chain fats.** These are broken down in peroxisomes (organelles in the cell), cytoplasm that contains enzymes including catalase and often some oxidases) to medium -chain fats which can be used as fuel. Oddly, some CFS sufferers do not seem to be able to do this. Sources of long-chain fats include fish, and the oil of nuts, seeds, and vegetables.

In short, the basic pathology in CFS/ME is slow recycling of ATP to ADP and back to ATP again. If patients push themselves and make more energy demands, ADP is converted to AMP, which cannot be recycled. It is this which is responsible for the delayed fatigue. This is because it takes the body several days to make fresh ATP from new ingredients. When patients overdo things and "hit a brick wall," this is because they have no ATP or ADP to function.

When the System Is Stressed

When energy is used faster than it can be supplied, there are at least two mechanisms by which the body can make emergency energy. This energy may save you from being caught by a saber-tooth tiger, or it's modern day equivalent, but both mechanisms have dire biochemical outcomes in the longer term.

- **The adenylate kinase reaction.** Two molecules of ADP can combine to make one of ATP and one of AMP. Great news about the extra ATP, but making AMP is a problem, because it can only be recycled very slowly, if at all. This means that the pool of circulating ADP and ATP is rapidly diminished, and mitochondria soon start to go slow. The body has to make brand new ATP. ATP can be made very quickly from the sugar, D-ribose, but D-ribose can only be made from glucose via the pentose phosphate shunt, which takes from one to four days. This delay is one possible explanation for the biological basis of delayed fatigue.
- **Switch into anaerobic metabolism with the production of lactic acid.** Again, this is short-term gain and long-term pain. One molecule of glucose, used anaerobically in its conversion to lactic acid, produces two molecules of ATP. This compares with 32–36 molecules of ATP (depending on the efficiency of mitochondria) when glucose is burned aerobically. Worse still, to convert lactic acid back to glucose requires six molecules of ATP (the Cori cycle). CFS sufferers simply do not have the ATP to do this, so the lactic acid burn is very persistent. The resulting muscle pain may persist for hours, often days.

The good news is that AMP *can* be recycled, but it happens very slowly. For practical purposes, for patients who are very fatigued, this recycling is so slow that it is clinically insignificant. Interestingly, the enzyme which facilitates this recycling (cyclic ➤

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AMP) is activated by caffeine. The perfect pick-me-up for CFS sufferers could be a real black organic coffee with a teaspoon of D-ribose and a large dollop of coconut cream to supply medium-chain fats.

Mitochondria Can Slow Due to Deficiencies

Deficiencies that can lead to mitochondria slowing are principally D-ribose, magnesium, niacinamide (B3), acetyl-L-carnitine, coenzyme Q10, and vitamin B12.

D-Ribose. If the absolute level of ATP present in the cells at any time is low, then this may point to poor production of de novo ATP from its raw material D-ribose. D-ribose in an individual with normal metabolism can be made from glucose via the pentose phosphate shunt (converting six carbon sugars into five carbon sugars, the starting point for making de novo ATP.) However, this takes time and D-ribose is made slowly. The treatment is to supplement with D-ribose, starting with three teaspoonfuls daily (15 grams) and adjusting according to response. Sufferers may see changes within a few days. Clinically, I expect to see less delayed fatigue, as well as improvement in muscle pain and aching. D-ribose has a very short half-life and ideally should be taken in small doses throughout the day in drinks (hot or cold). Interestingly, caffeine may enhance the effects of D-ribose so I recommend taking it with coffee, green tea, or equivalent, so long as those are tolerated. It is worth supplementing D-ribose, even with low normal results, because I have had so much happy feedback from patients taking this supplement.

Some people with a fermenting gut may ferment D-ribose and worsen the situation. Many CFS sufferers have to reserve D-ribose only for use as a rescue remedy for situations in which they have overspent their energy. (A low-carb diet, used in the treatment of fermenting gut will starve out fermenting microbes; as a result, levels become so low that the occasional large dose of D-ribose will not ferment before it is absorbed.)

A few people may not tolerate D-ribose because it is derived from corn and small amounts of corn antigen may remain, to which they can react allergically. Many will react to preparations on the market that purport to be corn free.

Very low ATP may mean the patient is not pacing activity well – the moment the CFS sufferer has energy, it is all too tempting to spend it, because they have already missed out on so much. However, pacing is essential to a sustained and substantial recovery.

Magnesium. The release of energy from ATP is magnesium dependent, as is the synthesis of ATP from ADP, so magnesium is of central importance in mitochondria. Magnesium deficiency is one of the knottiest problems I encounter. Having low levels of magnesium inside the cells and mitochondria is a symptom of CFS/ME, but also a cause of it. This is because 40% of resting energy simply powers the ion pumps for sodium/potassium (Na/K) and calcium/magnesium (Ca/Mg) across cell membranes, a process essential for life. When energy supply is diminished, there is insufficient energy to fire these pumps, so magnesium cannot be drawn into cells for oxidative phosphorylation to work. If there is insufficient energy to drag magnesium into the cells, then there is a further diminishing of energy delivery. This is just one of the many vicious cycles in CFS/ME.

Sufferers do not simply replete their magnesium levels through taking supplements, although this must be tried. This is because the problem is not just magnesium deficiency but also magnesium in the wrong department. Some CFS/ME sufferers need magnesium by injection to get the desired result. I think this is rather like kick-starting an engine to get it going. CFS/ME sufferers may need a spike of magnesium in the blood to push it into cells to fire up the mitochondria. I suggest patients self-inject perhaps ½ ml of 50 percent magnesium sulphate subcutaneously daily, usually into the roll of fat round the tummy that we all get when we sit down, using a fine insulin syringe. It astonishes me that such a tiny amount can make a big difference. Such an injection contains approximately 25 mg of elemental magnesium, when the recommended daily amount is at least 300 mg. This is a hypertonic solution, which means that the injection can be painful and may leave small lumps, though with time the lumps do disappear. I also suggest warming the injection to blood heat to make it less painful. What seems to be additionally helpful is to administer the injection very slowly. This gives the magnesium a chance to disperse and dilute, rendering it less of an irritant.

Some people find magnesium by nebulizer works as well. Indeed, nebulized magnesium is an excellent treatment for asthma. (Please see my web page for instructions on making up a solution of magnesium sulphate for nebulizing. All that is needed are Epsom salts dissolved in water, and a nebulizer through which the dissolved Epsom sales are bubbled. For additional information, see http://drmyhill.co.uk/wiki/Magneium_by_nebuliser)

Niacinamide. Low levels of nicotinamide adenine dinucleotide (NAD) may be a symptom of poor function of Krebs citric acid cycle (KCA). Measuring NAD is a functional test, and it does not just reflect vitamin B3 levels in the blood. The job of KCA is to take energy from acetyl groups and convert it into NADH (nicotinamide adenosine diphosphate), which is then converted to NAD in the process of driving chemi-osmosis. Therefore, to see normal levels of NAD needs not only an adequate supply of B3, but also a properly functioning Krebs citric acid cycle.

Dr. Sarah Myhill is a clinical physician based in the UK and a leader in the treatment of chronic fatigue syndrome. She has focused her career on identifying and treating the underlying causes of health problems and is a frequent lecturer on topics such as organophosphate poisoning, the problems of silicone, and chronic fatigue syndrome. She is the author of *Sustainable Medicine*, *Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Enchephalitis,* and *The PK Cookbook.*

I initially used 500 mg of supplementary vitamin B3, but increasingly I use 1,500 mg of slow-release niacinamide. In theory there is potential for NAD to cause liver damage. However, I have never seen this in clinical practice. I believe this is because toxic effects of drugs and vitamins result from micronutrient deficiencies. Where these are being adequately replaced, the potential for toxicity is virtually zero. I recommend using niacinamide, which does not cause flushing.

Acetyl L-carnitine. To get fuel to burn for oxidative phosphorylation, it needs to be transported as acetate across the mitochondrial membrane by acetyl L-carnitine. This is normally present in red meat, but generally not in large enough quantities to replete the deficiencies found in fatigued states. As a routine, I recommend taking supplementary acetyl L-carnitine 1–2 grams daily.

Coenzyme Q10. I often measure levels of CoQ10, but less so now simply because I know the result will be low. Indeed, I have never seen a normal level of CoQ10 in someone who is not already taking supplements of this nutrient. I recommend using ubiquinol 200 mg daily, often more. Dr. Stephen Sinatra, the cardiologist who pioneered the use of CoQ10 in the treatment of all forms of heart disease (the Sinatra Solution) sometimes uses one gram a day. Like the majority of nutritional supplements, it has no known toxicity so over-dosing is virtually impossible. (It is, however, very expensive.)

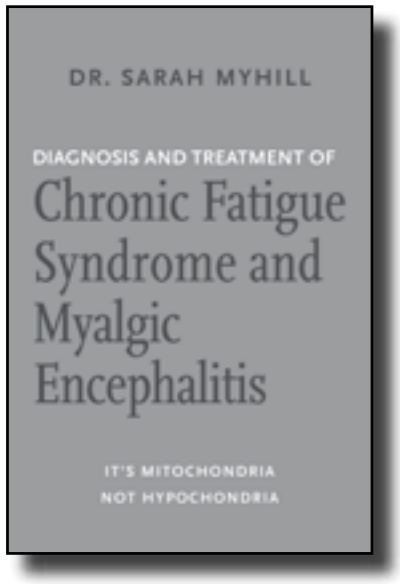
Vitamin B12 by injection. Vitamin B12 is a big player in CFS/ME. It multitasks and is an essential aspect of the methylation cycle, protein synthesis, energy delivery mechanisms, detoxification, and, of course, making new red blood cells. Furthermore, the doses of B12 that work best for individuals vary enormously. This means we have laboratory guidelines that give us a level of B12 in the serum that is sufficient to prevent pernicious anemia. However, this may not be sufficient to allow people to function at their full potential. This means we cannot rely on any measurement of B12 to determine if a person has adequate levels.

There are probably epigenetic influences here as well – for example, we know that Japanese prisoners of war who suffered severe malnutrition for some years required much higher doses of B vitamins generally in order to remain healthy for the rest of their lives. This is obviously an extreme example: nutrient depletion can take many forms. Being a vegetarian, for instance, is a major risk factor for CFS/ME, and vegetarians have a lower intake of B12 than carnivores. B12 at high doses is a safe and reasonable thing to do.

However, B12 is very poorly absorbed in the digestive tract – its absorption requires a sufficiently acid stomach and the presence of intrinsic factor in the gastric juice, together with a normal section of terminal ileum. As we age, our ability to absorb B12 declines, but our requirement for it increases as we become biochemically less efficient. Therefore, at a certain age (perhaps 50 and certainly 60 onwards) we would all benefit from a monthly injection of vitamin B12.

Dr. Patrick Kingsley in his work with patients with multiple sclerosis found that some patients did not respond clinically until they received up to 20 mg (20,000 mcg) a day by injection. In patients with CFS/ME we know there is a proinflammatory tendency. Professor Martin Pall identified a proinflammatory cycle he terms the NO/ONOO cycle; it happens that B12 is an essential aspect of damping this down.

I am also aware clinically that for many people, injections are superior to oral supplements. I suspect the reason for this is that an injection spikes the level of B12 in the blood and therefore forces it into the system by the law of mass action. The only way to ensure good B12 status is a trial of vitamin B12 by injection. Ideally this should be in the form of methyl cobalamin, since this is the one which needs the least processing in the body to be effective. In the past, we were able to obtain vitamin B12 in 5 mg/ml strength, but that is much more difficult to get now, so we must make do with lower concentration solutions.



Putting the regimen in place. If you are unable to access mitochondrial function tests, these regimens can still be safely put in place with no risk of toxicity problems. It is my experience that the abnormalities I see are so predictable, if finances are tight, I would prefer to see money spent on treatment regimens rather than on tests (Table 1).

Mitochondria Can Slow Due to Blockages

Blocking can occur in mitochondria in the synthesis of ATP (conversion of ADP to ATP) and/or because of poor translocator protein function. We do not currently know all the causes of blockage, but essentially, they divide into two major categories:

- Blockages resulting from toxins due to internal metabolism (endogenous)
- Blockages from toxins in the external world (exogenous)

Blockages from Internal Metabolism

Lactic acid. This dynamic prevents athletes from breaking records. CFS/ME sufferers who do not pace their activities properly and continue to push themselves perform less well. This is somewhat like athletes in a state of chronic over-training. However, telling my patients to do less is difficult.

Sugar. Running a high blood sugar level decreases energy. I suspect this partly explains the fatigue of metabolic syndrome and diabetes.

Aldehydes. John McLaren-Howard of Acumen Lab often finds evidence of malondialdehyde adhered to translocator protein. This is a symptom of poor antioxidant status. I treat this with B12 injections, together with nutritional supplements (zinc, copper, manganese, selenium, glutathione, and CoQ10).

Products of the fermenting gut. These products include bacterial endotoxins, various alcohols, aldehydes, and acetones, hydrogen sulphide, D-lactate, and many other possible nasties. They do not show up on translocator protein studies, possibly because they are volatile. The treatment, of course, is as per fermenting gut.

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Blockages Due to Chemicals from the External World

These blockages result from toxic metals and volatile organic compounds. They can also come from prescription drugs. A very useful resource is the report, *Drug-Induced Mitochondrial Dysfunction: An Emerging Model for Idiosyncratic Drug Toxicity.*[1] The report concludes that many drugs with organ toxicity have a "mitochondrial liability". A screen of more than 550 drugs revealed that 34 percent of the medications evaluated had mitochondrial liabilities (Table 1). The severity of these adverse effects was observed to be idiosyncratic.

Mitochondrial Impairment by Drugs with a Black Box Warning

The potential for mitochondrial harm can result from the use of certain drugs, notably those with black box warnings, the strictest caution in the labelling of prescription drugs or products by the FDA when there is reasonable evidence of serious hazard with a drug.

Liver mitochondria:

- *Antivirals.* Abacavir, didanosine, emtricitabine, entecavir, lamivudine, nevirapine, stavudine, telbivudine, tenofovir, tipranavir, zalcitabine, zidovudine
- *Anticancer.* Dacarbazine, flutamide, gemtuzumab, methotrexate, pentostatin, tamoxifen
- *Antibiotics.* Isoniazid, streptozocin, trovafloxacin
- *Antifungals.* Ketoconazole (oral)
- *CNS disorders.* Dantrolene, divalproex, sodium felbamate, naltrexone, nefazodone, and valproic acid
- *Hypertension.* Bosentan

Cardiovascular mitochondria:

- *Anthracyclines.* Daunorubicin, doxorubicin, epirubicin, idarubicin
- *NSAIDS.* Celecoxib, diclofenac, diflunisal, etodolac, fenoprofen, ibuprofen, indomethacin, ketoprofen, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, piroxicam, salsalate, sulindac, thioridazine, tolmetin
- *Anesthetic.* Bupivacaine
- *Anticancer.* Arsenic trioxide, cetuximab, denileukin, diftitox, mitoxantrone, tamoxifen
- *Beta-blocker.* Atenolol
- *Antiarrhythmics.* Amiodarone (oral), disopyramide, dofetilide, ibutilide
- *CNS amphetamines.* Atomoxetine, droperidol, methamphetamine, pergolide
- *Diabetes medications.* Pioglitazone, rosiglitazone

Conclusion

Mitochondrial dysfunction is key to the mechanisms that drive CFS. In the UK, we now have an objective test, the Mitochondrial Function Profile Test or ATP Profiles, that gives us a precise measurement of that level of dysfunction. The ATP Profiles also identify where things are going wrong and why, providing further clues to treatment. These treatments essentially fall into two categories: a deficiency in raw materials, for which the treatment is supplementation, and blockage(s) in the biochemical pathways, for which the treatment involves various methods of detoxification. In the case of blockage, further testing (translocator protein studies) can identify which toxins are causing these blockages. Such blockages can be treated via chelation with DMSA, selenium, zinc, clays such as zeolite, high dose vitamin C, iodine, and heating regimens such as soaks or saunas. Dr. McLaren-Howard has many other innovative tests he uses which are helpful clinically, but not yet available generally. Our first step is to find another lab that can do all the above commercially. If this is of interest, you can reach us via Dr. Myhill – office@doctormyhill.co.uk

1. Dykens JA. *Drug-Induced Mitochondrial Dysfunction: An Emerging Model for Idiosyncratic Drug Toxicity.* Pfizer Drug Safety Research & Development. 2007. www.mitoaction.org/files/Dykens%20for%20Mitoaction.pdf. Accessed 28 September 2016.

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Table 1. Mitochondrial Support Supplementation

When	What	Dosage	How	Why
Away from food	Glutathione	250 mg	Sublingually	Vital for glutathione peroxidase and to detox toxic metals
With breakfast	CoQ10	200 – 400 mg	Orally	Mops up free radicals
	Niacinamide	1500 mg slow-release	Orally	Essential intermediate between Krebs citric acid cycle and chemiosmosis
	Carnitine	1 – 2 grams	Orally	Gets fuel inside the mitochondria for burning
	Copper	1 mg	Orally	Give if SOD is low
	D-ribose	5 grams	In coffee or tea	Raw material to make new ATP. Good for delayed fatigue. Take care if there is fermenting gut.
	Magnesium	½ ml 50% magnesium sulphate	Subcutaneous injection	Kick-starts the mitochondrial engine
	Vitamin B12	0.5 to 5 mg	Subcutaneous injection	Improves energy delivery. Excellent for fatigue, foggy brain, mood, detoxification, protein synthesis, etc.
Lunch	D-ribose	5 grams	In coffee or tea	Last dose of caffeine 2 pm
	Manganese	3 mg	Orally	If SOD is low
Supper	D-ribose	5 grams	No tea or coffee	Caffeine disturbs sleep
Bedtime	Zinc	30 mg	Orally	If SOD is low, but arguably for life, since zinc deficiency is pandemic
	Selenium	300 mcg	Orally	Especially if glutathione peroxidase is low, but arguably for life since selenium deficiency is pandemic

Healing with Homeopathy

by Judyth Reichenberg-Ullman, ND, MSW; and Robert Ullman, ND

www.healthyhomeopathy.com

Homeopathy for Refugee Trauma

A Touchstone of Grief and Compassion

I, Judyth, am writing this article. I cannot remember such a shared pool of grief and disbelief as has been generated in this country by the Latino immigrant children debacle since perhaps the Vietnam War. Besides my own personal heartache on hearing and seeing the heartless treatment of these devastated parents and children, even babies, wherever I go others confide in me their deep pain. Recently a longtime patient, whose family I have treated for over 30 years, asked me to share lunch. The topic of conversation was, "How do we hold this inconceivable injustice and do something with our compassion that makes a genuine difference?" As Bob and I were leaving the movie theater recently after seeing, *The Pope: A Man of His Words*, the mother of another longtime patient came running up to me in tears asking, "What can we possibly do?"

I find myself devouring books (a few of us have formed a study group) about refugees, the latest being *Exit West, The Displaced: Refugee Writers on Refugee Lives*, and *Man's Search for Meaning* by Viktor Frankl. Dr. Frankl's story was beyond horrific and heroic. As a Jew in World War II, he had the choice of escaping to the US or remaining in Europe with his parents. An Austrian neurologist, he chose to stay to stay in Austria and devoted whatever energy he could rally to doing psychotherapy with the inmates of the Auschwitz, Theresienstadt, and Dachau concentration camps, where he was also a prisoner. Please, if any of you reading this article does not believe that the Holocaust really happened, Google Victor Frankl and take in his story and the bone-chilling photos of the concentration camp survivors. This book, published in 1946, included as one of the ten most influential books in the US, had sold over 10 million copies by the time the author died in 1997. "To give light," Dr. Frankl concluded, "must endure burning." How many of us would have made the choice that he did, rather than avoid the unspeakable horrors and cruelty to which he was subjected? What carried him through all of it was a search for a deeper, abiding meaning or purpose of life.

Fortunately, Bob and I live in a very refugee-friendly community. Although Langley, Washington, didn't opt to become a Sanctuary City initially (out of fear on the part of some board members of loss of federal funding), it did, a couple of months later, issue an immigrant-friendly statement. Many of the one thousand residents of our "village" are avid travelers; and benefits, cross-cultural events sponsored by the Northwest Whidbey Language Association (NWLA), and various churches tend to be well-attended and generously supported. In 2007 Bob and I held a fundraiser for a Peruvian family from the island of Amantaní on Lake Titicaca and raised $3500 in an evening. Just last week NWLA sponsored a poignant, eye-opening evening with three amazing women survivors on the Democratic Republic of the Congo, which, we learned, is the rape capital of the world. I offered my services to treat these women with homeopathy for their PTSD and other health issues and hope that bears fruit.

I am reminded of my early introduction to refugee trauma in my third year of Bastyr. As a student doctor in the naturopathic clinic in its very early days, I happened to be the only one fluent in Spanish when a wave of Salvadoran refugees arrived in Seattle, welcomed with open arms by a nearby Christian church. Since the supervising doctors could not communicate with these women and children, I was, thankfully, on my own. Their personal stories were truly harrowing. I especially remember María, who had been raped, piled atop a truck of dead bodies, and survived only by seizing the moment to jump off and escape. Her story and those of her companions stuck with me for life. Those stories and many far worse surface daily in the media due to the forced displacement of so many families worldwide.

Now, for those of us who have the eyes and willingness to look, refugee families in so many parts of the world are struggling for survival, risking drowning, starvation, murder, rape, indifference, and neglect. Fortunately, homeopathy can be a balm to body, mind, and soul. Constitutional prescribing,

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for the whole person, requires expertise, sensitivity, and time. It can be of tremendous benefit in healing physical, mental, and emotional wounds, even those too terrible to imagine. However, for those of you who are not homeopaths with skill enough to do that, I would like to share some more basic homeopathic remedies that can also relieve pain and suffering significantly. If left unaddressed, these issues and states can remain with the individuals for life and be passed onto future generations.

PTSD

Remedies to consider first are *Aconite, Ignatia*, *Arnica,* and *Stramonium*.

Aconite (*Aconitum napellus* or Monkshood) is the number one remedy to consider for those frozen by sheer panic and terror. Imagine being in a stadium, train station, market where a terrorist attack occurs. Or, as in the case of the Congolese women, when militants suddenly and unexpectedly charged into their villages and homes, raping, murdering, threatening, and terrorizing. This absolute panic, which may turn into a recurrent flashback or nightmares for the rest of one's life, can be helped dramatically by *Aconite.* The symptoms are typically a racing, pounding heart, physical and mental restlessness, an overpowering feeling of imminent death. In one word: shock. Nerves are on edge, palpitations are persistent. The description of this remedy as "acute, sudden, and violent invasion" is the epitome of what many refugees have faced. Imagine having your family murdered, raped, or dismembered before your eyes. And being terrorized that you will be next. And having that horrendous scene replay again and again, even after you are safely out of the situation. This is the *Aconite* state.

Stramonium (Datura) has similar indications to *Aconite.* But it is particularly important to mention given the current trauma inflicted on immigrant children separated from their parents. A member of the nightshade family, the predominant fear in this remedy is being absolutely alone in the wilds at the mercy of dangerous, wild animals. There is a terror of darkness, being injured, having no one around to cling to, and being absolutely forsaken. I just read that the migrant children ripped, literally from their parents and, sometimes, siblings, are being prevented from hugging, using nicknames, and, even remaining with their siblings. Being put in a cage or cell with no daylight, unprotected, without the protective covering of clothes (think flimsy space blanket in a cold cell or room) is exactly the etiology that will trigger a *Stramonium* state. This underlying panic can erupt as violence, but it is only because of the sheer fright.

Ignatia (St. Ignatius bean): The key word for those needing this remedy is grief. It is often expressed in uncontrollable sobbing, sighing, and hysteria. But the other polarity is unexpressed grief. Disappointment is profound, and the individual is inconsolable. She may become absolutely hysterical or fall into a state where she cannot cry despite the most profound grief, suffering, and loss. There may be a sensation of a lump in the throat and a pressure in the chest. Imagine a Central American mother whose child is yanked from her desperate grasp, or a Syrian family whose raft washes up on a Greek shore, having lost their toddler in the sea on the way. Or a Congolese woman having witnessed the massacre of her parents and somehow survived a gang military rape. Or the longstanding grief of families from Eritrea or Nigeria who spend fifteen or twenty years in an inadequate basic refugee camp because they have simply nowhere else to go.

Arnica (Leopard's bane) is the number one remedy for trauma. Whether having escaped with one's life but not one's limbs in a minefield explosion or being bruised and battered from miles-long walks out of African villages that were pillaged or burned, *Arnica* can soothe the fear of being hurt mentally as well as physically; but it is the classic remedy for accident or trauma victims following a physical injury, accident, fall, or shock. A common reaction of those needing *Arnica*, following a trauma, is to say they are fine, need no help, and just to walk away. But they are in shock and not okay. They may have profound injury, such as internal bleeding, even life threatening. So it is important to help them rather than to believe that they are fine. I remember years ago walking across a busy Seattle street in front of one stopped car and not seeing a second in the other lane due to a blind spot. The auto, fortunately, did see me and stopped just as it barely touched me. I went right on as usual and began to get in my parked car, but the driver stopped me to make sure I was all right. I was clearly in an *Arnica* state.

Deeper Remedies for Longstanding PTSD and Other Symptoms

Feel free to use the five remedies above for the indicated conditions. You are most likely to have a 30C potency, however many of these cases are very intense, and I would use a 200C or 1M potency one time then follow the results closely. The substances not compatible with homeopathy are eucalyptus, camphor, menthol, and tea tree. Remedies may have to be repeated if the person drinks coffee.

There are over 4000 constitutional remedies. Which one is needed constitutionally, at a deeper, chronic level, by a refugee with PTSD is highly individual. Remedies made from magnesium, for example, are considered orphan remedies. Related mineral remedies including the *Natrums, Silicas, Aluminas*, and others address issues of identity. Highly sensitive individuals may need plant remedies, and those with strong victim or aggressor themes are likely to need remedies from the animal kingdom. Since treatment is so individualized, the individual's particular state can be addressed. I wish more traumatized refugees had access to homeopathic remedies and experienced homeopaths. In this world where so many are displaced, homeless, isolated, and suffering, homeopathy can make a profound difference.

Judyth Reichenberg-Ullman and Robert Ullman are licensed naturopathic physicians, board certified in homeopathy. We have written eight books on homeopathy as well as *Mystics, Masters, Saints and Sages – Stories of Enlightenment*. We also have an app: Natural Travel Doctor. Apple version: https://tinyurl.com/l7song8 and Android: https://tinyurl.com/m7cnexh**.** We are more passionate than ever about homeopathy and we never seem to tire of traveling.

We practice in Edmonds, Washington, and by Skype. The Edmonds office address has changed, as you will see on our website. We live on Whidbey Island, Washington, and in Pucón, Chile. Visit our website www.healthyhomeopathy.com. Please friend us on Facebook at Healthy Homeopathy. Call us at 425-774-5599 or email us at drreichenberg@gmail.com or drbobullman@gmail.com.

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Ask Dr. J

by Jim Cross, ND, LAc
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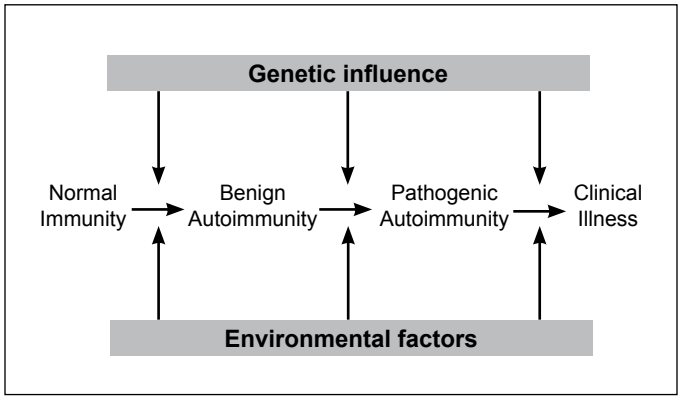
There's Somebody Inside My Body, But It's Not Me

Pink Floyd wasn't one of my favorite rock and roll groups, but a line from their album *Dark Side of the Moon* has always stuck with me: "There's someone inside my head, but it's not me!" After attending the Institute of Functional Medicine's annual get-together in Hollywood, Florida, May 31-June 2, on the theme of autoimmunity, I learned that their lyrics were partially correct with regards to autoimmune disease. The main point I took away from this convention was the body is not attacking itself. It's attacking modified self!

So why would a person's body modify itself so that it's very own protector or immune system would now wish to attack its own territory? Numerous speakers spoke to this fact, but Robert Roundtree's Day 1 Talk, "Autoimmune Disease and Environmental Toxicants," seemed to pretty straight forwardly lay out the ground rules.

First, he has a lovely graph from an article in the *New England Journal of Medicine* that shows the presence of autoantibodies in lupus occurs up to nine years before the onset of a clinical diagnosis.[1] To me this is saying that these autoimmune diseases are simmering in our bodies for an extended period of time before they are diagnosed. This aligns with our belief that gastrointestinal and respiratory borders are being breached by multiple environmental assassins leading to the introduction of foreign compounds in our bodies. What these foreign compounds are actually doing in our bodies is where my clinical insight has been greatly expanded.



He then next cites an article in the *Journal of Applied Toxicology* by Aristo Vojdani et al that shows some environmental chemicals, acting as haptens, can bind to proteins in our body, such as albumin, and form a protein adduct that is now seen as a neo-antigen or new antigen that is no longer self but modified self.[2] This causes our immune system to misidentify self-tissue as an invader and launch an all-out immune response to it, leading to what I believe is now being referred to mistakenly as autoimmunity. Hence the title to my column: "There's somebody inside my body but it's not me!"

Dr. Roundtree then posed an interesting question: Do autoimmune diseases start in the compromised tight junctions of leaky gut or in the compromised alveoli of the lungs due to inhalation of environmental chemicals which then enter our circulation and abrogate the mechanisms of immunotolerance. He cites three articles but especially one in *Mutation Research*, "Inhalation of environmental stressor & chronic inflammation: Autoimmunity and neurodegeneration," appear to bolster his claim.[3] For me, this is an area that I have personally overlooked (and won't in the future with patients). I still firmly believe that breaching the GI epithelium is also an important entry point into our bodies for these compounds.

Dr. Roundtree also had a great quote: "Good fences make good neighbors," meaning healthy barriers promote tolerance and prevent autoimmune disease. Basically, the rise in exposure to environmental pollutants is increasing the total body burden of xenobiotics. Many of these xenobiotics have been shown to disrupt healthy bodily barriers, which then lead to the production of modified self and autoimmune disease. He also espoused a "two-hit" signal theory of autoimmune disease: stranger + danger = autoimmune disease.

Next, I would just like to list some tidbits that I found clinically interesting from various speakers. Terry Wahls, MD, spoke regarding multiple sclerosis as she has incredible before (in a wheel chair) & after (her riding a bike) pictures of how far she has improved with her own MS. She also received the Linus Pauling Award and was a truly motivational speaker.

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Ask Dr. J

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Dr. Wahls showed proof that a fasting mimicking diet/FMD can enhance re-myelination in the central nervous system. She also talked about her own re-myelination pudding that she consumes every morning that has phosphatidyl choline dissolved in water, turmeric, cinnamon, Vitamins D and K2, and some what she termed "microbial-accessible" carbohydrates in it. Microbial accessible just means prebiotics that feed the probiotic population in our intestines such as chia seeds, flax seeds, and psyllium seeds. She also provided references for the various ingredients.

Steven Gundry, MD, is famous for his book *The Plant Paradox*. He had a great quote which I already have been using and hopefully so will you**: "It's what I tell you not to eat that is far more important."** For us and our patients to identify foods that actually do us harm and avoid them is an incredible gift. If that gift can be followed, I truly believe that we could prevent the vast amount of chronic illness in our society.

Dr. Gundry also had an extremely insightful aside that wasn't in his powerpoint: He knows he is healing leaky gut when the person's Vitamin D levels skyrocket or start to rise quickly. This also should be a "duh." If there is significant damage to the GI barrier, absorption will not be optimal. As the patient begins to heal their mucosa, absorption will increase and Vitamin D levels will more rapidly progress in a positive direction. This also exemplified a comment by Dr. Roundtree, which is that we have to slowly chip away at the problems associated with chronic disease. Everyone wants to be fully functional in a week but that just isn't going to happen. We have to encourage the patients to realize that they are Michelangelo, and they are slowly creating their own personal healthy Mona Lisa one chip at a time!

Dr. Gundry's Plant Paradox diet basically emphasizes pre-agricultural food sources that do not contain lectins. He brought up one powerful point: Native American people peel the skin off of their peppers and remove the seeds because both contain lectins. Italian grandmothers do the same to tomatoes for a similar reason. I must try that this summer as I have mild reactions to spaghetti and stronger reactions to bell peppers.

Also, I forget who said this, but please spell "desserts" backwards: Stressed! How apropos. To not deny ourselves any sweet treats would, I think, be untenable. So, IFM to the rescue. On most breaks, they had a coconut cashew kefir out for consumption that was to die for. I'm sure they would send you the recipe if you contact them.

What do you really take away from weekend seminars like IFM's? If you're extremely lucky, you discover a couple clinical pearls that will net you a few new patients, which will hopefully initiate a domino effect that will net you numerous more patients. If you're a knowledge junkie like me, you come away with new cellular mechanisms to explain certain diseases as I learned that all our wonderful environmental chemicals are producing novel, neo-antigens that aren't self but modified self which the body sees as foreign and attacks!

Due to my high school and college basketball career and extensive coaching experience, I also love to find sayings that motivate me, which I can also use with my patients to motivate them. I'll end with a couple I picked up in Florida.

Steven Gundry had a zinger: "Party like it was 9,999 years ago," as he claims humans were taller and had larger brains back then. This is his humorous way of saying all those troublesome plant lectins in our modern diet are causing problems in many of our bodies and didn't in our distant ancestors.

Another line that hit home with me: "If everybody is thinking alike, somebody isn't thinking." Credit that to General George Patton. As integrative/functional/restorative practitioners, hopefully we all are striving to treat our patients in the way that actually harmonizes the internal milieu of their bodies and allows that milieu to function optimally as it was meant to. That doesn't mean that there isn't room for lively, creative debate about how to accomplish that desirable feat. Disagreement, if done without ego, can lead both sides to see where they need improvement and where they already were moving in a positive direction.

Lastly, David Perlmutter, MD, had, for me, the best quote: "Please stop saying we're thinking outside the box and expand the box." If we can expand the box with evidence-based treatments that are successful, then many more people will be able to take advantage of our type of medicine, which is not only sustainable for our patients but also for the planet as a whole. This is an extremely tough task to accomplish as you are working against entrenched money, the pharmaceutical industry, and entrenched egos. We must just be persistent and continue to show successful outcomes so that progress can happen much quicker than the axiom that many people unfortunately believe in: "Science progresses one funeral at a time!"

References

1. Arbuckle MR, et al. Development of Autoantibodies Before the Clinical Onset of Systemic Lupus Erythematosus. *NEJM.* October 16, 2003; 349:1526-1533.
2. Vojdani A, Kharrazian D, Mukhergee PS. Elevated levels of antibodies against xenobiotics in a subgroup of healthy subjects. *J Applied Toxicology.* July 18,2004.
3. Gomez-Mejiba SE, et al. Inhalation of environmental stressor & chronic inflammation: Autoimmunity and neurodegeneration." *Mutation Research.* March 31, 2009;674(1-2):62-72.

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ISSN 1940-5434

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Published by
Townsend Letter for Doctors & Patients, Inc.
Jonathan Collin, President
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Curmudgeon's Corner

by Jacob Schor, ND, FABNO
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Primum Non Nocere meets Johnson et al

As naturopathic physicians we have taken an oath that includes the English translation of *primum non nocere*, that, foremost, we not harm our patients. While we often describe the phrase as a Hippocratic injunction, it isn't a phrase found in the Hippocratic Corpus. Nor is it in the Hippocratic Oath, taken by MDs, although most doctors assume the Oath includes this statement. The closest the Hippocratic Oath comes is the advice "to abstain from doing harm."

There is at least partial agreement among medical historians that this primum injunction was first voiced by the French doctor Auguste Chomel in the early 1800s although some references attribute it to Thomas Syndeham or Thomas Inman. Chomel's Latin version came first and the Thomases apparently only deserve credit for the English translation, which first appeared as 'First do no harm' in 1860. Worthington Hooker is also mentioned in these discussions because he is credited with being the first to employ the phrase in the United States.[1,2]

The injunction draws a line between injuring the patient by doing too much and causing harm by not doing enough. This is an important line.

While *primum non nocere* is a common denominator for all physicians, it shines bright upon and illuminates much of what we do as naturopathic physicians, in particular those who focus on naturopathic oncology. There is a fine line between the harm attributed to conventional cancer care and the benefits that result, which is sometimes hard to see; it is sometimes a challenge to discern any advantages from treatments without large studies and subjecting the data to statistical analysis. Without such careful evaluations, clinical benefits of some modern treatments can be hard to ascertain. There is an equally fine line between what we do as naturopathic physicians trying to discern if our therapies provide measurable benefits or not. There is a paucity of data to help us see our way and often we rely on evidence that is relatively weak. We encourage patients to use our therapies because there is a possibility the interventions will help and little reason to suspect they will cause harm. "We have nothing to lose in trying this" is something most of us have said often.

Things being as they are, we pay sharp attention to any evidence that justifies the therapies we suggest, seeking confirmation that they offer patients a chance for a better outcome and that assures us we are not causing harm. The publication of a study by Skylar Johnson and colleagues in the July 18, 2018 issue of *JAMA Oncology* has justly concerned many of us as it suggests the opposite of what we assumed could be true.[3] If Johnson's findings are accurate, some of us should abruptly change the way we practice. The problem is that there are questions about the data employed in Johnson's analysis, enough so that we may have to wait until a newer, better study is published to insist on change.

Johnson's July paper, an earlier version was published in January,[4] was a retrospective observational analysis of data obtained from the National Cancer Database on 1,901,815 patients who were diagnosed with non-metastatic breast, prostate, lung, or colorectal cancer between 2004 and 2013. This kind of study is sometimes referred to as data mining.

Johnson's study compared outcomes of 258 patients who had been flagged as utilizing complementary or alternative therapies (CM) against matched controls who did not use CM therapies. Use of complementary medicine (CM) was associated with significantly poorer five-year overall survival compared with no CM (82.2% vs 86.6%; P = .001) and was independently associated with greater risk of death

(hazard ratio, 2.08) in a multivariate model. On the face of it, complementary medicine was associated with a worse outcome.

In this research the authors chose to use a definition of complementary medicine that differs from the way it has generally been defined. In Johnson's view, "Complementary medicine (CM) is used in addition to conventional cancer therapy (CCT) and may be used as a substitute for adjuvant therapies."

Most integrative practitioners make a significant distinction between complementary medicine, which is used in addition to standard of care therapies, and alternative medicine, which is used instead of conventional therapies. Johnson sees use of 'complementary therapies' as falling on a continuous spectrum from what we would call complementary to alternative and groups together all practices whether they are used along with or instead of conventional cancer care.

Johnson also defined CM as "unproven cancer treatments administered by nonmedical personnel in addition to at least 1 conventional cancer treatment such as surgery, radiotherapy, chemotherapy and/or hormone therapy." His specification about nonmedical personnel has caused additional confusion as to how we interpret his meanings. Quoting the study, "Our work demonstrates that CM and alternative medicine likely represent entities along a continuum, rather than being distinct entities."

Johnson's lumping complementary and alternative therapies together concerned many of my colleagues as most of us strongly favor complementary or integrative approaches.

The CM patients in this study stand out as particularly non-compliant patients:

- 7% of them refused recommended surgery compared to 0.1% of the control group.
- 34% of them refused chemotherapy compared to 3.2% of the control group.
- 53% refused radiotherapy compared to 2.3% of the control group.
- 33.7% refused hormone therapy compared to 2.8% of the control group.

The use of complementary medicine (Johnson definition) (CM) was associated with increased risk of death when the data was analyzed in total, but if the data was categorized by which patients refused conventional treatment, the associations disappear: "CM (vs no CM) no longer had a statistically significant association with the risk of death (HR, 1.39; 95% CI, 0.83-2.33)."

In other words what Johnson really measured is the effect of poor compliance or not using conventional cancer therapy. Refusing conventional cancer treatment (CCT) was associated with a poorer prognosis. Choosing to use any form of complementary medicine in this group of patients was just a strong predictor of who would refuse conventional treatment. Johnson's conclusion:

> …patients who use alternative medicine and CM are often behaving similarly in refusing conventional treatment. As a result, like the patients using alternative medicine (who do not undergo any initial CCT), patients using CM are also placing themselves in an unnecessarily greater risk of death by refusing some CCT....

In Johnson's data use of CM is a measure of whether the patient will be compliant with the treatment suggested by the oncologist. If the patient doesn't do as told, they are twice as likely to die. Is that a surprise?

Sadly, this conclusion is believable and many of us who practice naturopathic oncology have seen noncompliant patients do poorly over the years. While most of our patients are pragmatic and want to do whatever it takes to get better, there are some who come to the office adamant that they will not 'submit' to standard therapies and insist on a particular treatment they believe offers cure. Perhaps Johnson's work might be an argument for integrative oncology over alternative oncology? In other words, perhaps it is time for us to argue stronger to get patients to follow the standard of care? This could pose a challenge for the many patients who believe what they have 'researched on the internet' and believe in the big pharma cancer treatment conspiracies.

People acquire inaccurate beliefs about cancer and natural cures from a multitude of sources and opt for all sorts of 'belief-based treatments' over evidence-based therapies in combination with evidence-informed natural medicine. One may think the ready access to information on the internet would lessen this problem but instead we have entered a 'post truth' era, where facts seems to matter less and this problem of websites promoting miracle cures seems to only be worsening.

The central message of Johnson's article is clear: patients with cancer who refuse proven, standard-of-care cancer treatments have worse overall prognosis and survival. The study doesn't tell us what complementary therapies do.

You'll have noticed that I keep predicating my statements, "If Johnson is correct." That's because his data do not quite add up.

As mentioned the authors mined their data from the National Cancer Database starting with 1,901,815 patients. That's just short of two million people. Out of these nearly 2 million people, they found just 258 people who met their study criteria.

Numerous published estimates suggest relatively high percentages of cancer patients chose to incorporate some form of alternative or complementary medicine into their cancer treatment. A 1998 review by Cassilith reported a high of 64% and a low of 7%.[5,6] The NIH suggests that 30% of adults and 12% of kids with cancer are engaged in non-conventional cancer therapies. [7] More recent estimates suggest utilization of CAM therapies by cancer patients is anywhere between 25% and 84% and that this varies by part of the country and type of cancer. [8-16]

Yet in Johnson's data, only 258 cases out of nearly 1,901,815 patients met the inclusion criteria. This calculates to less than

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Curmudgeon's Corner

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0.01% of the original cohort. Even if we take the NIH's conservative estimate that only 30% of adults with cancer engage in CAM practices, there should have been about half a million patients who qualified; the incredibly low number of people meeting the study criteria rings an alarm. The numbers are off by four decimal points of where they should be. There should have been far more study participants. If we conservatively estimate that half of cancer patients engage in some alternative medical practice, we would expect nearly a million patients to have qualified for analysis. Something about the selection methods used by Johnson et al, did not work. Knowing this, we are forced to question all of their conclusions.

The other problem with this study is that the results made for good headlines and the news media these days is driven more by what attracts the public's attention than what is good information. Even the *New York Times* found the temptation too great and made the best of it using the headline: "Alternative Cancer Treatments May Be Bad for Your Health: People who used herbs, acupuncture and other complementary treatments tended to die earlier than those who didn't."

The *Times* author does point out that, "The complementary treatments did no harm when conventional treatment was carried out simultaneously."[17] But with the leading headline in larger font, few readers will notice such a qualification.

As is often the case, negative studies get the most attention. We do not see the same amount of coverage for studies with positive outcomes.

The *Times* missed writing about Eran Ben Arya's 2015 paper that reported that complementary medicine along with chemotherapy improved fatigue and the quality of life of women being treated for gynecological cancer.[18] Nor was there mention of Jill Johnson's 2014 paper that reported complementary medicines in an oncology setting reduced pain and anxiety.[19] or other papers that encourage us that what we are doing is helpful.[20,21] A PubMed search for published clinical trials on complementary medicine and cancer from the first of this year to my writing this in mid-August yields 121 citations. There is a great deal of good research that is just not making the news.

There are some patients who acquire a strongly-held belief that a "non-toxic" or "natural" approach to treating cancer is superior to conventional approaches presented by their oncologist. Johnson's results probably should encourage all of us who care for cancer patients to encourage patient to seek integrative or complementary care rather than to pursue purely alternative treatments in lieu of conventional care. The data would do so quite strongly, if only there wasn't a question about those numbers. It's all about the *primum non nocere* business.

References

1. Smith CM. Origin and uses of primum non nocere--above all, do no harm! *J Clin Pharmacol*. 2005 Apr;45(4):371-7.
2. "First do no harm" revisited. *BMJ* . 2013;347:f6426.
3. Johnson SB, et al. Complementary Medicine, Refusal of Conventional Cancer Therapy, and Survival Among Patients With Curable Cancers. *JAMA Oncol*. 2018 Jul 19.
4. Johnson SB, et al. Use of Alternative Medicine for Cancer and Its Impact on Survival. *J Natl Cancer Inst*. 2018 Jan 1;110(1).
5. Adams M, Jewell AP. The use of complementary and alternative medicine by cancer patients *Int Semin Surg Oncol*. 2007; 4: 10.
6. Ernst E, Cassileth BR. The Prevalence of Complementary/Alternative Medicine in Cancer. A Systematic Review. *Cancer*. 1998;83:778–782.
7. https://nccih.nih.gov/health/integrative-health page updated June 2016.
8. Maskarinec G, et al. Ethnic differences in complementary and alternative medicine use among cancer patients. *J Altern Complement Med.* 2000;6:531–538.
9. Morris KT, et al. A comparison of complementary therapy use between breast cancer patients and patients with other primary tumor sites. *Am J Surg.* 2000;179:407–411.
10. Lee MM, et al. Complementary and alternative medicine use among men with prostate cancer in 4 ethnic populations. *Am J Public Health.* 2002;92:1606–1609.
11. Burstein HJ, et al. Use of alternative medicine by women with early-stage breast cancer. *N Engl J Med.* 1999;340: 1733–1739.
12. Richardson MA, et al. Complementary/alternative medicine use in a comprehensive cancer center and the implications for oncology. *J Clin Oncol*. 2000;18:2505–2514.
13. Patterson RE, et al. Types of alternative medicine used by patients with breast, colon, or prostate cancer: predictors, motives, and costs. *J Altern Complement Med.* 2002;8:477–485.
14. VandeCreek L, Rogers E, Lester J. Use of alternative therapies among breast cancer outpatients compared with the general population. *Altern Ther Health Med.* 1999;5:71–76.
15. Adler SR, Fosket JR. Disclosing complementary and alternative medicine use in the medical encounter: a qualitative study in women with breast cancer. *J Fam Pract*. 1999;48:453–458.
16. Vapiwala N, et al. Initiation of complementary and alternative medical therapies (CAM) by cancer patients (pts) during radiation therapy (RT). *Proc Am Soc Ther Radiat Oncol* .2005;63 (suppl 1):S451.
17. Nicholas Bakalar. *The New York Times*. July 23, 2018. https://www.nytimes.com/2018/07/23/well/alternative-cancer-treatments-therapies-harm-health-death.html.
18. Ben-Arye E, et al. Quality-of-life outcomes in patients with gynecologic cancer referred to integrative oncology treatment during chemotherapy. *Support Care Cancer.* 2015 Dec;23(12):3411-9.
19. Johnson JR, et al. Effects of integrative medicine on pain and anxiety among oncology inpatients. *J Natl Cancer Inst Monogr*. 2014 Nov;2014(50):330-7.
20. Axtner J, et al. Health services research of integrative oncology in palliative care of patients with advanced pancreatic cancer. *BMC Cancer.* 2016 Aug 2;16:579.
21. McCulloch M, et al. Lung cancer survival with herbal medicine and vitamins in a whole-systems approach: ten-year follow-up data analyzed with marginal structural models and propensity score methods. *Integr Cancer Ther.* 2011 Sep;10(3):260-79.

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Celiac Disease and Food Allergy

Of 104 patients who had both fibromyalgia and irritable bowel syndrome, seven (6.7%) were found to have celiac disease, as demonstrated by HLA-DQ2/HLA-DQ8 positivity, tissue transglutaminase antibodies, and duodenal biopsy. Those seven patients experienced marked improvement of fibromyalgia and digestive symptoms after going on a gluten-free diet.[5] In another study, of 246 patients with fibromyalgia in whom celiac disease had been ruled out, 90 (37%) had a positive response to a gluten-free diet. Improvement was seen in some patients after a few months on the diet, whereas others required many months to see improvement. The benefits were maintained during follow-up periods of 5-31 months (mean, 16 months).[6]

In my experience, allergy to foods other than gluten grains can also exacerbate symptoms in some patients with fibromyalgia. The type of food allergy that worsens fibromyalgia symptoms is often called "hidden" or "masked" food allergy, since the reactions are not obvious like they are with type 1 (immediate) hypersensitivity reactions. Hidden food allergy can usually be identified by means of an elimination diet followed by individual food testing.[7] The possibility that hidden food allergy is contributing to fibromyalgia symptoms should be considered particularly in patients who have other conditions that may be due to food allergy, such as irritable bowel syndrome, migraines, perennial rhinitis, or asthma.

Monosodium Glutamate and Aspartame

Monosodium glutamate (MSG) and aspartame act as excitatory neurotransmitters (excitotoxins), which have the potential to damage neurons and cause symptoms in susceptible individuals. In case reports, four women with fibromyalgia (duration of illness, 2-17 years) that had failed to respond to previous treatments had complete or nearly complete resolution of symptoms within months after eliminating MSG or both MSG and aspartame from their diet. In each patient, symptoms recurred whenever MSG was ingested.[8] In other case reports, two patients with long-standing fibromyalgia pain (10 and 3 years, respectively) experienced complete resolution of pain after excluding aspartame from their diet.[9]

Following these case reports, a study was conducted in which 57 patients who had both fibromyalgia and irritable bowel syndrome (IBS) were advised to exclude MSG and aspartame from their diet for four weeks. Thirty-seven patients followed the diet, of whom 31 (84%) reported a greater-than-30% improvement of symptoms. These 31 responders were randomly assigned to a two-week double-blind, placebo-controlled crossover challenge with 5 g of MSG in juice or placebo (juice without MSG) for three consecutive days each week. Compared with placebo, MSG significantly worsened symptoms of both fibromyalgia ($p < 0.03$) and IBS ($p < 0.05$).[10]

However, another study of 72 women with fibromyalgia found no difference in pain between those randomly assigned to discontinue MSG and aspartame for three months and those assigned to a waiting-list control group.[11] Possible explanations for these negative results include noncompliance with the diet, and different patient populations compared with the positive study. In the negative study, there was no mention of how many patients had IBS. It is possible that avoidance of MSG and aspartame is beneficial only for those fibromyalgia patients who also have IBS.

Conclusion

Dietary changes can in many cases improve various symptoms associated with fibromyalgia. Though not everyone responds, and though the improvements are sometimes only modest, some patients experience marked benefit. Dietary treatment should therefore be considered for all patients with fibromyalgia.

Alan R. Gaby, MD

Reference

1. Hein G, Franke S. Are advanced glycation end-product-modified proteins of pathogenetic importance in fibromyalgia? *Rheumatology*. 2002;41:1163-1167.
2. Ruster M, et al. Detection of elevated N epsilon-carboxymethyllysine levels in muscular tissue and in serum of patients with fibromyalgia. *Scand J Rheumatol*. 2005;34:460-463.
3. Kaartinen K, et al. Vegan diet alleviates fibromyalgia symptoms. *Scand J Rheumatol*. 2000;29:308-313.
4. Ling WH, Hanninen O. Shifting from a conventional diet to an uncooked vegan diet reversibly alters fecal hydrolytic activities in humans. *J Nutr*. 1992;122:924-930.
5. Rodrigo L, et al. Remarkable prevalence of coeliac disease in patients with irritable bowel syndrome plus fibromyalgia in comparison with those with isolated irritable bowel syndrome: a case-finding study. *Arthritis Res Ther*. 2013;15:R201.
6. Isasi C, et al. Fibromyalgia and non-celiac gluten sensitivity: a description with remission of fibromyalgia. *Rheumatol Int*. 2014;34:1607-1612.
7. Gaby AR. Food allergy. In Gaby AR. Nutritional Medicine, Second Edition. Concord, NH, 2017, www.doctorgaby.com; chapter 7.
8. Smith JD, et al. Relief of fibromyalgia symptoms following discontinuation of dietary excitotoxins. *Ann Pharmacother*. 2001;35:702-706.
9. Ciappuccini R, et al. Aspartame-induced fibromyalgia, an unusual but curable cause of chronic pain. *Clin Exp Rheumatol*. 2010;28(6 Suppl 63):S131-S133.
10. Holton KF, et al. The effect of dietary glutamate on fibromyalgia and irritable bowel symptoms. *Clin Exp Rheumatol*. 2012;30(6 Suppl 74):10-17.
11. Vellisca MY, Latorre JI. Monosodium glutamate and aspartame in perceived pain in fibromyalgia. *Rheumatol Int*. 2014;34:1011-1013.

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The Influence of Dietary Factors on Fibromyalgia

Fibromyalgia is a chronic condition characterized by widespread musculoskeletal pain, fatigue, and sleep disturbances. Other common symptoms include depression, headaches, irritable bowel syndrome, dysmenorrhea, difficulty concentrating, anxiety, non-cardiac chest pain, shortness of breath, hypersensitivity to various stimuli (such as noise, odors, bright light, and touch), urinary frequency or urgency, and paresthesias. Many patients with fibromyalgia also meet the criteria for a diagnosis of chronic fatigue syndrome. The cause of fibromyalgia is unknown.

Conventional therapy includes medications (muscle relaxants, antidepressants, analgesics, hypnotics, and pregabalin [an anticonvulsant]), counseling, stress management, trigger point injections, and various physical modalities. The response to conventional treatment is unsatisfactory in a high proportion of cases, and many patients suffer from chronic poor health. Fibromyalgia places a huge financial burden on individuals and on society, in terms of high health care costs, lost productivity, and disability payments.

A number of studies have suggested that dietary modifications can improve various symptoms in patients with fibromyalgia.

Dietary Factors: General Considerations

Nutrition-oriented practitioners have observed repeatedly that many patients (not necessarily those with fibromyalgia) who improve their diet experience better energy levels, fewer aches and pains, improved mood, and other positive changes. Potentially beneficial dietary changes include emphasizing whole foods and avoiding refined sugar, other refined carbohydrates, caffeine, alcohol, food additives, and processed foods.

Cooking Methods

Cooking and preparing food in such a way as to minimize the formation of advanced glycation end products (AGEs) may be beneficial for patients with fibromyalgia. AGEs are formed during cooking and food processing by the interaction of a reducing sugar (i.e., glucose, fructose, or lactose) and a protein or an amine-containing lipid. AGEs are absorbed from food intact and persist in tissues, where they can modify protein structures and evoke an inflammatory response. Compared with healthy controls, patients with fibromyalgia have been found to have significantly higher concentrations of AGEs in both serum and muscle biopsy samples. AGEs may contribute to the pathogenesis of fibromyalgia by modifying muscle proteins or by evoking an inflammatory response.[1,2]

Studies have shown that cooking at lower temperatures and in the presence of water results in less AGE formation than does cooking at higher temperatures and in the absence of water. Emphasizing boiling, poaching, and stewing over frying, broiling, and roasting may decrease daily AGE intake by up to 50%.

Raw-Food Vegan Diet

Eighteen patients with fibromyalgia consumed a low-salt, raw-food vegan diet for three months, consisting of fruits, berries, vegetables, mushrooms, nuts, seeds, legumes, and cereals. Since the diet contained little or no vitamin B12, a vitamin B12 supplement was recommended. Significant improvements were seen after three months in pain ($p = 0.005$), joint stiffness ($p = 0.001$), sleep quality ($p = 0.0001$), general health ($p = 0.02$), and rheumatologist's assessment ($p < 0.04$). Most of the patients were overweight at the beginning of the study and had a significant decrease in body mass index. Symptoms gradually returned when the patients resumed their omnivorous diets.[3]

Some of the improvement observed in this study may have been due to the avoidance of common food allergens, but consumption of raw foods per se may be beneficial. Raw foods contain various beneficial substances that are destroyed in cooking. In addition, eating uncooked foods may decrease the formation of toxic substances in the gut by altering the bacterial flora.[4] Moreover, compared with cooked foods, raw foods contain substantially lower amounts of advanced glycation end products and other potential inflammatory mediators (see above).

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Clinical Study #1 (1999)

In a study of 319 women visiting three medical clinics, most women's normal vaginal bacterial residents included *L. crispatus* (32%), followed by *L. jensenii* (23%), *L.* 1086V (15%), *L. gasseri* (5%), *L. fermentum* (0.3%), *L. oris* (0.3%), *L. reuteri* (0.3%), *L. ruminis* (0.3%), and *L. vaginalis* (0.3%).*

Antonio MAD, *et al. Journal of Infectious Diseases* 1999;180:1950–6.

Clinical Study #2 (2007)

In another study involving 126 healthy pregnant women, *L. crispatus* and *L. gasseri* were the most dominant species found, followed by *L. jensenii* and *L. rhamnosus*.*

Kiss H, *et al. BJOG: An International Journal of Obstetrics & Gynaecology* 2007;114: 1402-1407.

Clinical Study #3 (2014)

In a double-blind, randomized placebo-controlled trial, 1-week of oral supplementation with the four Astarte strains significantly enriched *Lactobacilli* in the vaginal tract and reduced Nugent score in the neo-vagina of post-operative transsexual women, an environment typically resistant to colonization by *Lactobacilli.*

Kaufmann U, *et al. Eur J Obstet Gynecol Reprod Biol.* 2014 Jan;172:102-5.

Clinical Study #4 (2016)

In immunosuppressed pregnant women with herpes infection, oral supplementation with the four Astarte strains significantly reduced undesirable microbes in the intestines and vagina, and simultaneously increased vaginal *Lactobacilli* 3-fold compared to placebo.* This was accompanied by reduced incidence of placental insufficiency, pre-eclampsia and fetal distress in the probiotic supplemented women.

Anoshina TM, *et al. Perinatologiya I Pediatriya* 2016;4(68):22-25.

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