ALTERNATIVE MEDICINE & WOMEN'S HEALTH

TOWNSENDLETTER.COM

Townsend Letter

The Examiner of Alternative Medicine

Preventing Human Papillomavirus
Is Gardasil the Answer?

Postmenopausal Osteoarthritis
Integrating Conventional and Natural Treatments

MARDI GRAS

Managing Menopausal Symptoms
Beyond Hormone Therapy

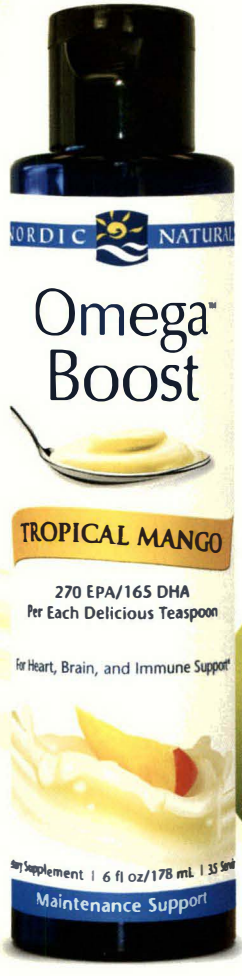
Adolescent Girls' Mental Health
Safe, Natural Treatments

Homeopathy for the Backcountry
Hypothermia and Altitude Sickness

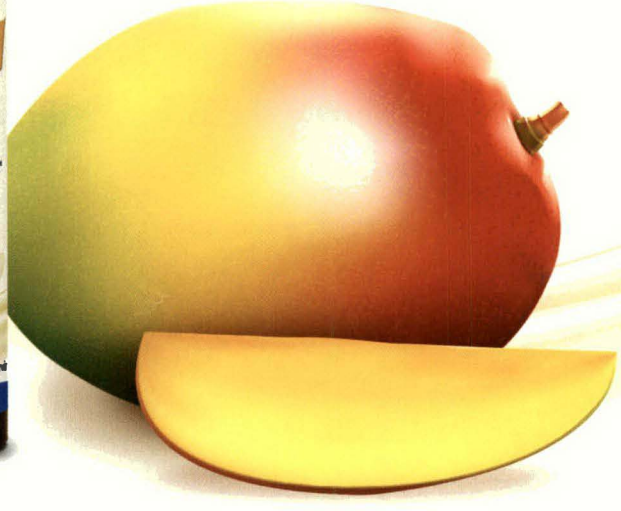
FEB/MARCH 2014
ISSUE #367/368 | $7.50

Delicious Taste. Better Compliance. Better Results.

New!



- Creamy mango flavor the whole family will love
- Exceptional taste supports patient compliance
- 525 mg omega-3s per serving
- Fast absorption for a tasty boost of omega-3s
- Supports heart, brain, and immune health*



Nordic Naturals tropical mango Omega Boost™ is a creamy, delicious formulation of omega-3s that supports optimal health and wellness. Like all Nordic Naturals products, Omega Boost is in the triglyceride form for better absorption.* Each velvety teaspoon contains 525 mg of omega-3s in a creamy mango flavor the whole family will love.

For heart, brain, and immune support, recommend Omega Boost to your clients.* Delicious taste and increased bioavailability means better compliance and results.

Committed to Delivering the World's Safest, Most Effective Omega Oils™

800.662.2544 x1 | nordicnaturals.com

NORDIC® NATURALS

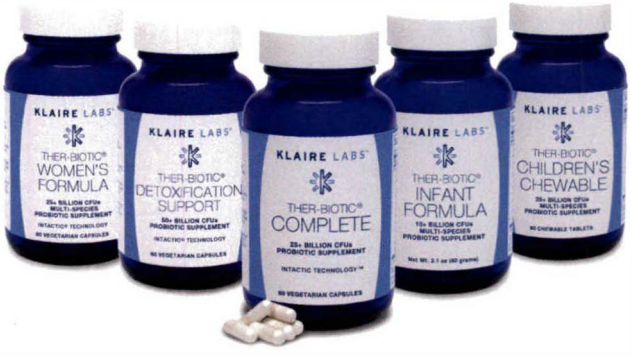
* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

If everyone was the same, a cookie cutter approach to probiotics would work.

You approach patients as individuals and help them according to their needs. So do we.

At Klaire Labs® we have developed the industry's most comprehensive line of probiotic formulations because we understand patients have differing needs that change over the course of their lives.

40 years ago, we developed some of the very first hypoallergenic supplements and we continue to lead and innovate with pure, viable, probiotics guaranteed through independent testing. Order with confidence, knowing our technical team of experts can guide you in finding just the right formula for your patient.



Take care of all your patients' probiotic needs with one call.

KLAIRE LABS®
A division of ProThera®, Inc.

The original hypoallergenic probiotic.™
klaire.com | 888-488-2488

Available only through health practitioners. Private labeling and custom manufacturing offered.
ProThera® operates a GMP 9000 registered facility certified by NSF® International.

0.00002

Extremely small number. *Extremely big impact!*

Did you know?

- According to the FDA, a product containing 20 parts per million or more of gluten cannot be labeled gluten-free.
- 5-10% of the world's population may suffer from gluten sensitivity.*
- 1 out of every 133 Americans (about 3 million people) have Celiac Disease.*
- 97% of Americans estimated to have Celiac Disease are not diagnosed.*
- 30% of the US population is estimated to have the genes necessary for Celiac Disease.*
- In a recent study, 60% of children and 41% of adults diagnosed with Celiac Disease were asymptomatic.*
- There are currently no prescription drugs available to treat Celiac Disease.*
- The average cost of a misdiagnosis is $5,000-$12,000 per person per year.*

** According to The National Institutes of Health*

When it comes to gluten and nutritional supplements, a zero-tolerance policy isn't just a smart move for your patients, *it's a critical move for your practice.*

BIOTICS RESEARCH CORPORATION

Utilizing "The Best of Science and Nature" to Create Superior Nutritional Supplements

GLUTEN FREE GUARANTEE

Supplement Your Success™

At Biotics Research, all of our supplements are gluten free—and they always have been! Many supplement companies use wheat as a primary ingredient for their products but you never have to worry about that at Biotics Research. *Ever.*

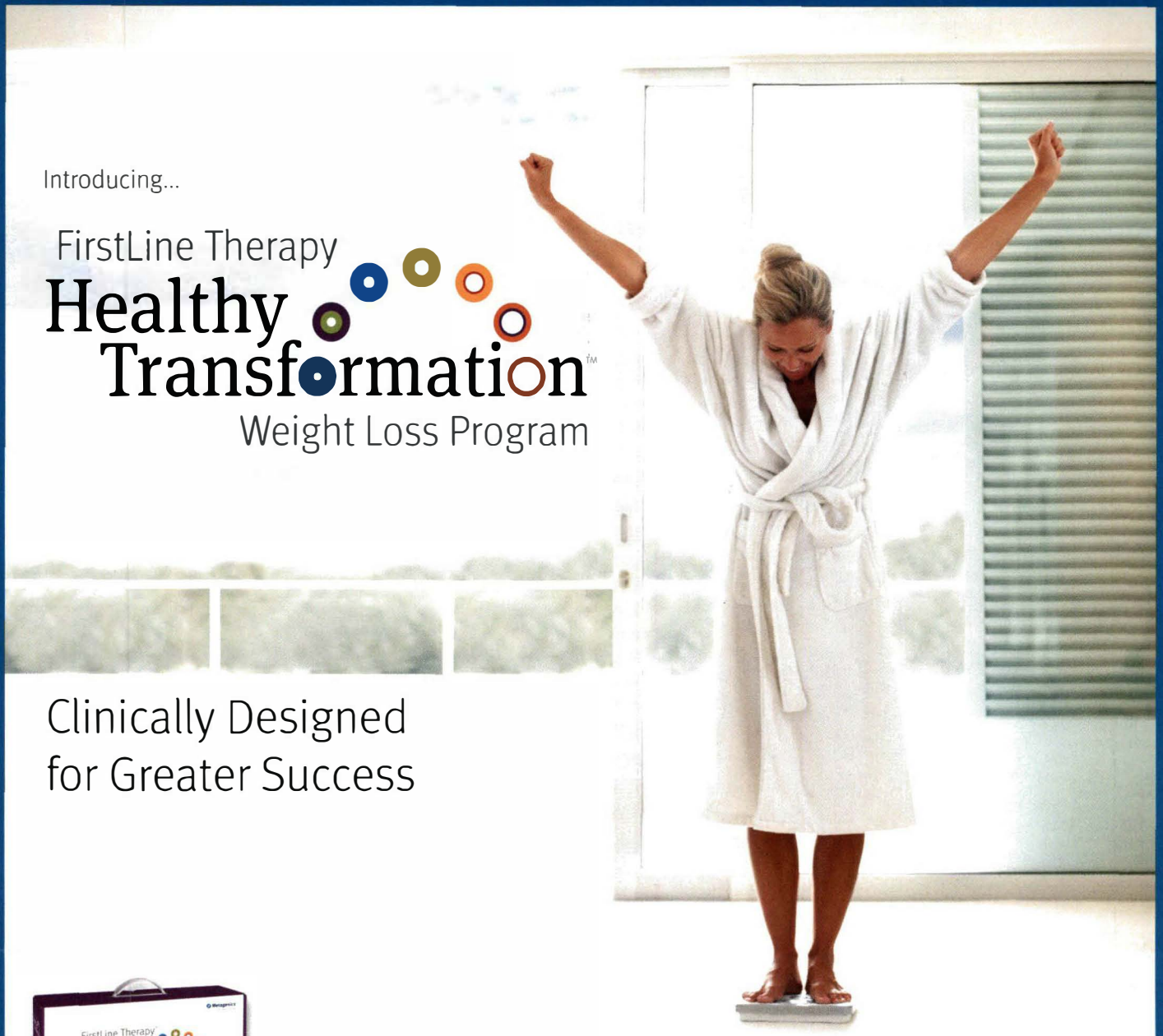
800-231-5777
www.bioticsresearch.com

Introducing...

FirstLine Therapy

Healthy Transformation™

Weight Loss Program



Clinically Designed for Greater Success

11% weight loss in 12 weeks†

Discover the program that helps solve many of the challenges that doctors and patients face with traditional weight loss programs. Healthy Transformation features a simple-to-follow diet and exercise plan—with conveniently packaged nutritional products, program guides, and online resources for doctors and patients—while providing nutritional support for overall health. Effective clinical weight loss has never been easier.

Order Today!
800 692 9400

Open an Account
metagenics.com/newaccount

More information
KnowHealthyTransformation.com

Metagenics®
Genetic Potential Through Nutrition

†Study conducted at the Functional Medicine Research Center®, the clinical research arm of Metagenics. Eleven percent weight loss is for participants as a group. Product ingredients used in the study vary slightly from those used in the final formulas.

Breakthrough Science + Nutrigenomic Based Products + FirstLine Therapy + Unsurpassed Quality = **The Metagenics Difference**

Finally, a Probiotic Supplement That's Worth Recommending to Your Patients

"It's worth taking the time to find supplements that demonstrate proven results."

Dr. Natalie Engelbart
Specializing in Functional Neurology and Clinical Nutrition

I only recommend products that are backed by clinical research and contain superior ingredients—so my patients experience consistent results. That means I don't limit myself to a single nutritional company; I find individual nutritional products that are the best of their kind.

That "best product" philosophy is key when it comes to probiotics. Years of research have confirmed that healthy probiotic balance has a trickle down effect on immune response, energy level, mood, and the overall wellness of every body system. But not just any probiotic will achieve positive patient outcomes.*

A colleague who understood my high standards recommended Dr. Ohhira's Probiotics®. After much research, I discovered they had received rave reviews in not only scientific circles but also from people using the product.

I recommend Dr. Ohhira's Probiotics® Professional Formula to my patients, my family, and I take the product myself—because it is the very best probiotic formula on the market today, period!

"Dr. Ohhira's Probiotics® Professional Formula exceeds my strict criteria for probiotics, and consistently provides excellent patient outcomes."

- Backed by 25 years of research
- Fermented with mulitple probiotic strains for 5 years to concentrate health-supporting organic acids, vitamins and other biogenic components*
- Contains the probiotics' food supply to ensure coherence*
- Supports health of the individual's own unique probiotic strains*
- No refrigeration needed – fermented at seasonal temperatures

ESSENTIAL FORMULAS®
PROFESSIONAL

Essential Formulas Incorporated • (972) 255-3918 (phone) • www.EssentialFormulas.com • Become a friend of Dr. Ohhira on Facebook.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Cognitive and Emotional Support*

AllergyResearchGroup®

Innovative Nutrition

200 mg of Zen: *For that Buddah-like Feeling*

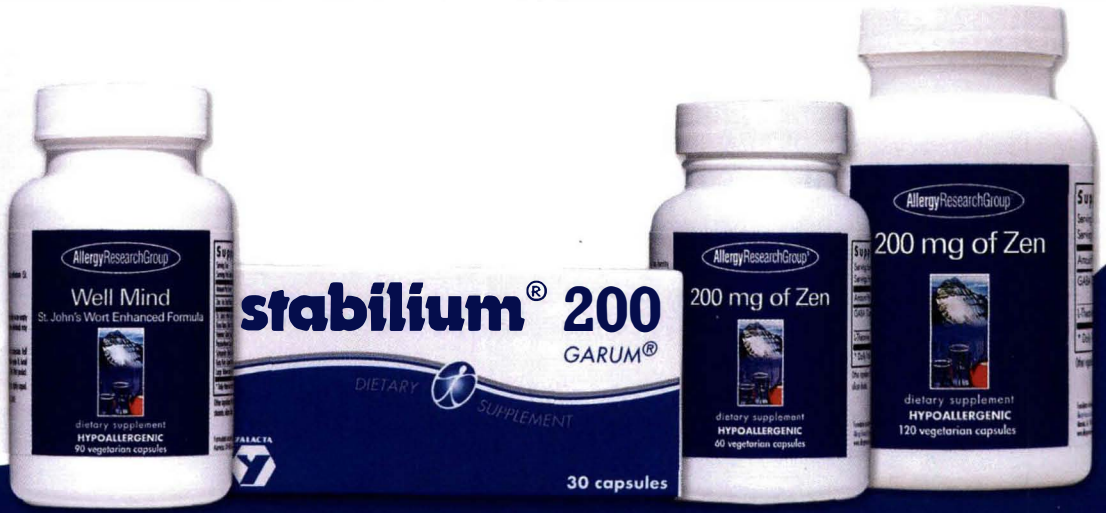
Promotes relaxation without sedation, with L-theanine and GABA.* L-theanine occurs naturally in green tea and has been shown to support meditative "quiet mind" alpha-wave brain activity, which is involved in reducing anxiety and increasing mental alertness and acuity.* GABA is a major inhibitory neurotransmitter that is critical for normal brain function.*

Stabilium® 200: *Build Stress Resilience!**

First used in ancient Celtic Ireland, this extract from the viscera of the deep-sea Great Blue Fish has supported people of all ages for centuries through both mental and physical stress.* It has been shown to support cognitive function, memory, concentration, learning, and alpha-wave brain activity.*

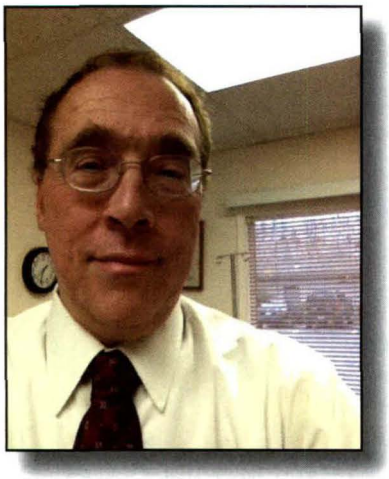
Well Mind: *Enhanced St. John's Wort Formula**

St. John's Wort standardized to 0.3% hypericin, and enhanced with traditional calming herbs, Kava Kava, Valerian, and Passionflower.* Schisandra supports conversion of neurotransmitters in the liver, and Gotu Kola supports circulation.* Zinc salts are well known in Europe for their beneficial effects on mood.*



Allergy Research Group® • Phone: 800-545-9960/510-263-2000
Fax: 800-688-7426/510-263-2100 • www.allergyresearchgroup.com

*This statement has not been evaluated by the U.S. Food and Drug administration. The product is not intended to diagnose, treat, cure, or prevent any disease.

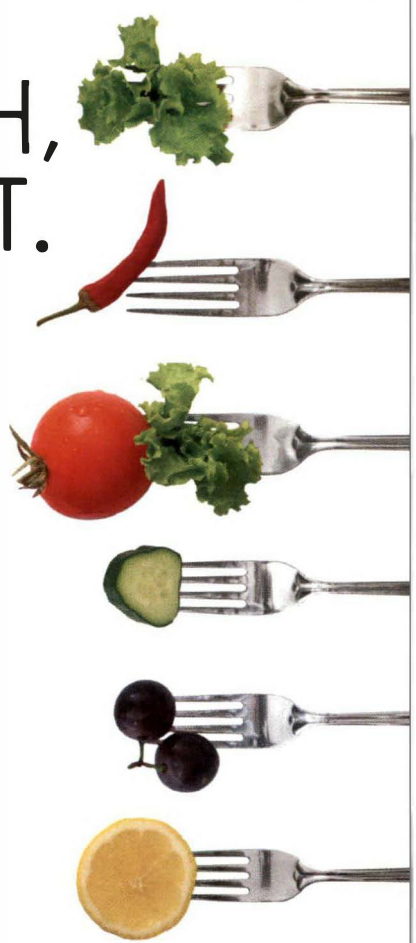


From the Publisher

ACAM Meeting: William Walsh, PhD

One of the great pleasures of attending an ACAM (American College for Advancement in Medicine) meeting is listening to a brilliant lecturer whom one has never heard before. The ACAM meeting last November in Palm Springs featured William J. Walsh, PhD, an international expert in the use of nutritional medicine in mental health. I had known that Walsh had collaborated with Carl Pfeiffer, MD, PhD, who had pioneered nutritional biotyping in schizophrenia. Pfeiffer was very impressed with Dr. Abram Hoffer's high-dose niacin treatment for schizophrenia. Pfeiffer separated schizophrenic individuals into three categories based on levels of blood histamines and urinary pyrroles. In the 1970s, Walsh was working as a research scientist at the Argonne National Laboratory in Illinois. He became interested in studying whether there were measurable biochemical abnormalities in individuals with schizophrenia as well as other mental disorders, including depression, anxiety disorder, and ADHD. In addition he was interested whether there were biochemical and nutritional abnormalities in individuals engaged in criminal behavior that caused them to fail rehabilitation. Walsh's research activities at the Argonne Laboratory offered him access to freely analyze blood,

continued on page 8 ➤



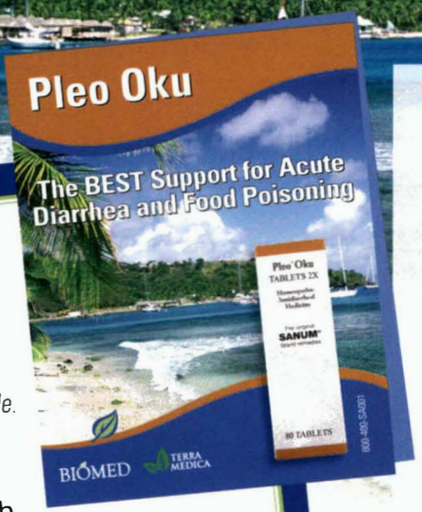
IMAGINE WHAT YOU CAN DO WITH A REMEDY LIKE THIS.

Now Available in Tablet Form!

DON'T TRAVEL WITHOUT IT!

PLEO OKU TABLETS

Our BEST from SANUM-Kehlbeck



Call now for your

Pleo Oku Tablets FREE SAMPLES

Item #800-400-SA001. 10 tablets per sample.

1-800-665-8308

See what ***YOU*** can do with Pleo Sanum in your practice.

While quantities last!

Patient Sample kit offer in effect until April 30, 2014.
Call today! For licensed practitioners.
Limit 10 samples per customer account.

Pleo Oku Tablets Are Effective For:

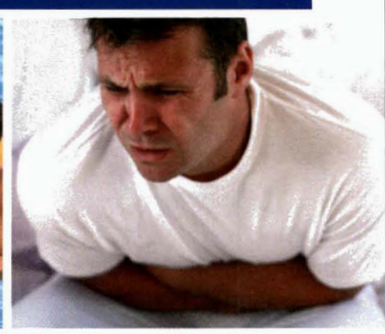
- Prevention of or for acute traveler's diarrhea
- Food poisoning and gastrointestinal infections
- Food intolerances and over indulgence in food or alcohol
- Parasites
- Elimination of metabolic waste
- Pancreas insufficiencies
- Shown to reduce acute dietary allergic reactions

The NEW Pleo Oku tablets are great for travelling. Acute diarrhea and food poisoning can stop travelers in their tracks while on vacation. Pleo Oku, derived from an African tree bark, is a quick acting and healing remedy for infectious conditions of the GI tract. *Also available in drops.*

Swiss doctor, Dr. Thomas Rau, M.D., has been known to say: *"It is the law to have Pleo Oku in the pocket always."*

✓ No side effects ✓ Effective ✓ Non-toxic

The BEST support for acute diarrhea and food poisoning.



14EP04 • TL02/03-2014

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.

innovation you can trust

1-888-415-0535
www.terra-medica.com

TERRA MEDICA

Letter from the Publisher
continued from page 6

hair, and urine of patients with mental health or behavioral problems. Walsh appreciated Hoffer's work demonstrating neurochemical abnormalities in "adrenochrome," an older term for a dopamine and norepinephrine metabolite. Pfeiffer had differentiated schizophrenic individuals having elevated histamine levels (histadelia) from individuals having low histamine levels (histapenia). Walsh wondered if individuals with schizophrenia, anxiety disorder, or criminal behavior indeed had measureable histamine abnormalities and other abnormalities.

Walsh's work was not based on studying a handful of patients. His study of patients was intensive and exhaustive. Patients had the usual exam of CBC, metabolic profile, and urine analysis. As expected, the blood counts and chemistries of patients with mental health problems were normal. One exception was that the white blood cell known as the basophil was found to be elevated in individuals with high serum histamine levels and depressed in individuals with low serum histamine levels. Walsh's work confirmed that nearly 40% of schizophrenics, generally diagnosed as paranoid schizophrenics, did have a high histamine level. He also found that 30% of schizophrenics, including those with schizoaffective disorder, had low histamine level. Another 30% of schizophrenics were found to have a high urinary pyrrole level (what Pfeiffer had labeled as Mauve factor because the urine turned purple on standing). However, Walsh's work determined that while histamine levels did help in making a biochemical diagnosis, antihistamine therapy was not the key to treatment.

Instead Walsh wanted to consider the rationale for using pharmaceuticals when treating schizophrenia to determine if nutritionals may play an alternative role in treatment. He focused on the synaptic receptors that regulate the content of the neurochemicals serotonin, dopamine, norepinephrine, and GABA. Pharmaceuticals such as SSRIs and SNRIs inhibit the reuptake of serotonin, norepinephrine, and GABA. Antipsychotic medications such as Thorazine increase the reuptake of dopamine. Walsh views the neurochemistry at the receptor site as directed by methylation that inhibits the reuptake of the neurochemical versus acetylation that enhances the neurochemical reuptake. He thinks that drugs inhibiting reuptake are methylating drugs while those that enhance reuptake are acetylating drugs. Walsh's work has shown that nutrient therapy also increases or decreases methylation. In nutritional medicine, we are aware that many nutrients are helpful in methylation, such as folic acid, SAMe, and vitamin B12. However, Walsh's work has shown that while folic acid and vitamin B12 are strong methylators, they perform adversely in brain methylation. It has also shown that with individuals having low methylation, folic acid and vitamin B12 work poorly; instead these individuals respond much better with SAMe and methionine. In contrast,

continued on page 15 ➤

To promote cognitive function, recommend Cognizin.*

Cognizin® is a patented form of citicoline, the brain-health nutrient known to increase neurotransmitter levels, mental energy and cell membrane integrity.* This neural activity supports concentration, focus and recall, which provides your patients with an effective way to promote cognitive functioning as they age.* Cognizin is also pure, vegetarian and allergen-free. When patients need to stay alert and focused throughout the day and combat the normal effects of aging on cognition, recommend supplements containing Cognizin.*

Cognizin®

For the evolution of your mind®

Follow Cognizin®

To learn more about the science behind Cognizin®, download our fact sheet for professionals at **www.cognizin.com**

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

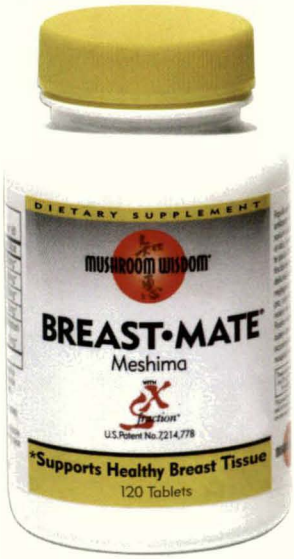
Look for Cognizin® Citicoline in these fine brands.

AOR · Ecological Formulas · Balance Your Life JoMar Labs amino acid source · Metabolic Maintenance

The best breast support doesn't come from a bra!

Breast•Mate is your all-natural supplement to support breast health.*

- Meshima is known as the "women's" mushroom -- research shows an influential role in supporting immune and breast tissue health.*
- Meshima's unique compound, PL-fraction™, has an affinity to nourish breast tissue cells*
- Antioxidant-specific green tea and broccoli extracts that help maintain healthy cells.*
- Features SX-fraction® (from Maitake), known to support healthy glycation, an important biological process to maintain health.*
- Especially for you -- **Introductory Discount of 50%** for a limited time only. (Code TL314).



MUSHROOM WISDOM®

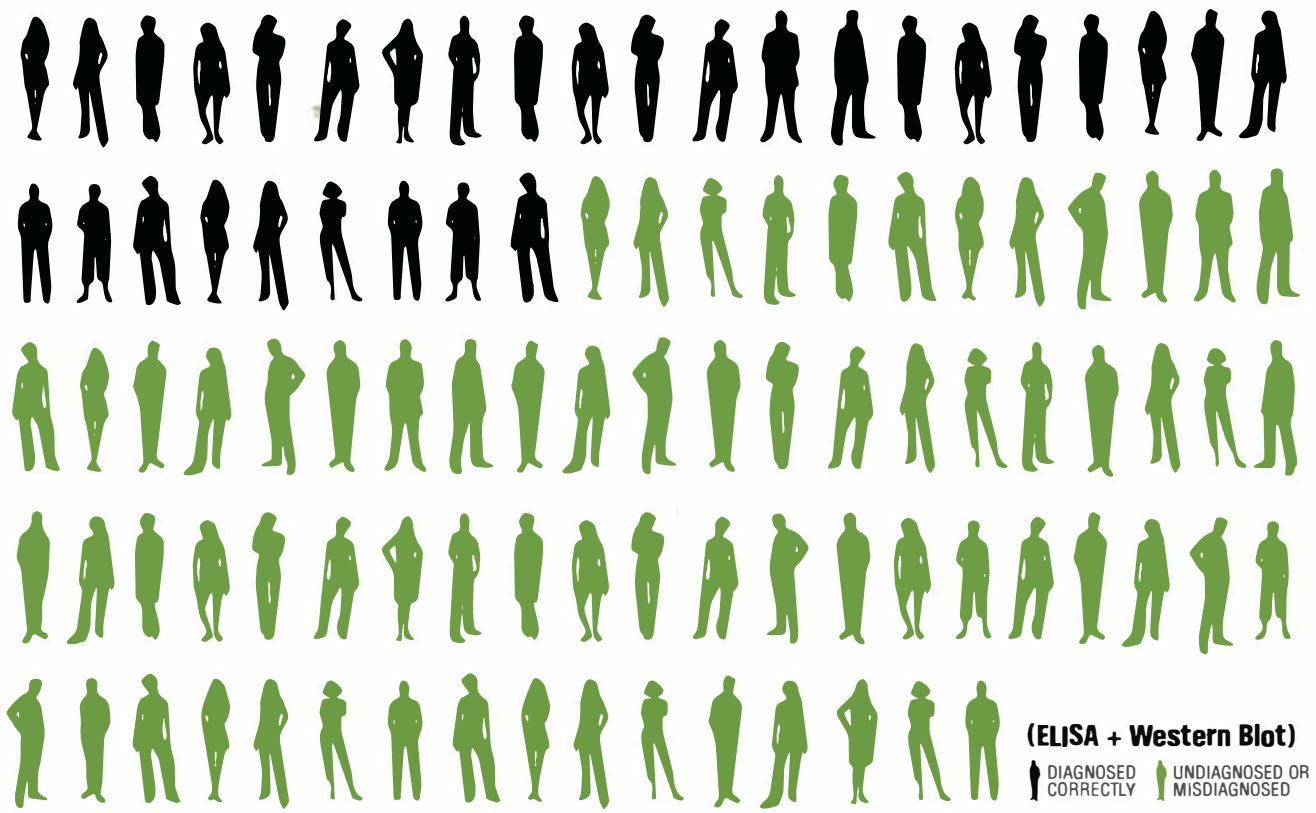
THE POWER OF KNOWLEDGE

1-800-747-7418 • www.MushroomWisdom.com

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Don't take chances with Lyme disease

50-70% of patients go undiagnosed or misdiagnosed due to low sensitivity of traditional antibody-based testing.



Lyme is a difficult disease to diagnose because the bacteria are not always detectable in the blood, even in active disease, as the bacteria like to "hide." The current two-tiered antibody method for detecting Lyme identifies it 30% of the time in early stages and 50% in late stages. iSpot Lyme™ is a ***NEW*** breakthrough cellular immune diagnostic tool that can detect the bacterial infection of Lyme disease with 84% sensitivity and 94% specificity.

For greater accuracy, add iSpot Lyme™.
Rule it out, retest.
www.ispotlyme.com

iSpotLyme™

Innovation from Pharmasan Labs™

Microbial BALANCING SUPPORT

Phospholipid Carrier System

Many of your patients face significant microbial challenges. These two products, developed by a doctor and herbalist, promote a healthy microbial landscape for your toughest patients. Each product is formulated with our GMO-free, soy-free phospholipid carrier system to enhance delivery of the constituents deep into cells and tissues.* Formulated as stand-alone support or to augment existing nutritional and/or pharmaceutical protocols.

BLt™

Supplement Facts
Serving Size: 20 drops
Servings Per Container: 120

Amount Per Serving	%Daily Value
Ceanothus Americanus (Red Root)	*
Smilax (Sarsaparilla)	*
Lomatium Dissectum	*
Eupatorium Perfoliatum (Boneset)	*
Dipsacus (Teasel)	*
Stillengia Sylvatica	*
Juglans Nigra (Black Walnut hulls)	*

*Daily Value not established.

OTHER INGREDIENTS: Organic alcohol, distilled water, non-GMO sunflower phospholipids.

Synergistic microbial balancer designed to promote a healthy immune & detox response while providing palliative herbal support.*

Crypto-Plus™

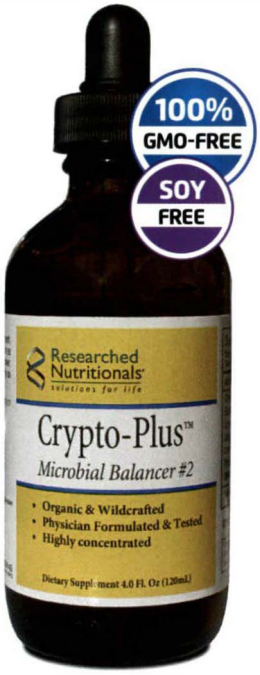
Powerful immune support / microbial balancer, formulated to promote targeted immune response & healthy cellular integrity.*

Supplement Facts
Serving Size: 20 drops
Servings Per Container: 120

Amount Per Serving	%Daily Value
Cryptolepis Sanguinolenta	*
Lomatium Dissectum	*
Ceanothus Americanus (Red Root)	*
Juglans Nigra (Black Walnut hulls)	*
Stillengia Sylvatica	*

*Daily Value not established.

OTHER INGREDIENTS: Organic alcohol, distilled water, non-GMO sunflower phospholipids.



Researched Nutritionals
solutions for life

CALL 800.755.3402
Tel: 805.693.1802 • Fax: 805.693.1806 • CustomerService@ResearchedNutritionals.com
www.ResearchedNutritionals.com | *Available only through healthcare professionals*

IN THIS ISSUE Feb/March 2014 | #367/368

ON THE COVER: Postmenopausal Osteoarthritis (56); Managing Menopausal Symptoms (82); Adolescent Girls' Mental Health (65); Homeopathy for the Backcountry (35); Preventing Human Papillomavirus (91)

Correction

In our January 2014 issue, the interview with Thomas Seyfried, PhD, did not give the interviewer's complete credentials. The byline should have appeared as "Michael Uzick, ND, FABNO."

Townsend Letter

ISSN 1940-5434

Subscriptions • Editorial • Advertising – 360/385-6021
24 Hr. Fax – 360/385-0699
911 Tyler Street • Pt. Townsend, Washington 98368-6541 USA
www.townsendletter.com
info@townsendletter.com

Editor-in-Chief	**Jonathan Collin, MD**
Publisher	**Jonathan Collin, MD**
Editor	**Lauren Brown**
Contributing Medical Editor	**Alan Gaby, MD**
Managing Editor	**Barbara Smith**
Contributing Editor	**Jule Klotter**
Editor Emeritus	**Irene Alleger**
Circulation Manager	**Joy Reuther-Costa**
Managing Assistants	**Julie Reuther; Jill Tomasi**
Marketing Projects	**Affinity Collin**
Advertising Projects & Accounts	**Barbara Smith; Joy Reuther-Costa Jonathan Collin; Samuel Collin**

Columnists & Writers

Majid Ali, MD	Ronald Klatz, MD, DO
Robert A. Anderson, MD	Ingrid Kohlstadt, MD, MPH, FACN
Jason Barker, ND	Marianne Marchese, ND
Eleonore Blaurock-Busch, PhD	Ralph W. Moss, PhD
Julie Chen, MD	Judyth Reichenberg-Ullman, ND
Marcus A. Cohen	Jacob Teitelbaum, MD
Tami Duncan	Jade Teta, ND
Nancy Faass, MSW, MPH	Keoni Teta, ND
Peter A. Fields, MD, DC	Robert Ullman, ND
Alan R. Gaby, MD	Rose Marie Williams, MA
Michael Gerber, MD, HMD	Paul Yanick, PhD
Robert Goldman, MD, PhD, DO, FAASP	Elaine Zablocki
Tori Hudson, ND	

Contributing Writers
Beatrice Trum Hunter • Gary Null, PhD • Katherine Duff

Editorial Advisory Board
Dharma S. Khalsa, MD • Tom Klaber • Robert A. Ronzio, PhD • Kerry Bone, FNIMH
Adrianne Harun • Melvyn Werbach, MD

Layout & Design	Sign Me Up! Inc.
Design Team	Barbara Smith; Joy Reuther-Costa; Jonathan Collin
Cover Photo Credit	Lisa Klumpp
Printing	Dartmouth Printing Company
Website Design & Maintenance	Sandy Hershelman Designs
Director of Logistics	John Hewitt

Published by Townsend Letter for Doctors & Patients, Inc.
Jonathan Collin, President • Deborah Nissen-Collin, Vice-President

Letter from the Publisher

continued from page 8

individuals who have high degree of synaptic methylation; for example, paranoid schizophrenics respond better to niacin and folic acid.

Walsh is emphatic that patients need individualized biochemical nutrient therapy depending on their biochemistries, their symptomatic process, their medical history, their response to pharmaceuticals, and their need to detoxify. Just as not every schizophrenic would respond equally well to folic acid and SAMe, zinc and copper detoxification, or gluten and casein restriction, neither would every depressive or ADHD patient.

Walsh headed the Walsh Research Institute and the Pfeiffer Clinic for nearly two decades, studying 30,000 individuals with mental illness and behavioral disorders. Using protocols based on intensive history and physical diagnosis as well as comprehensive laboratory testing, individualized treatment programs were designed with a very high rate of success. Most patients need to continue to use their psychiatric medication for a number of months, but they can be tapered or reduced in dose, lessening adverse effects.

Walsh's work with criminals and youngsters with behavioral problems did demonstrate laboratory abnormalities that were not found with basic lab studies. Perhaps the most intriguing lab study was the finding that zinc/copper ratios were abnormally low or high. Elevated copper burdens were found to be very common in misbehaving youngsters with explosive outbreaks. Strangely, the children who expressed the most oppositional defiance and the most antisocial criminals had a high zinc/copper ratio. Walsh's nutrient therapy seeks to rebalance the zinc/copper ratio; this is not necessarily an easy task – frequently, many nutrients are needed to bring a lab test abnormality into balance.

Walsh has found that this work also plays a role in treating autism. While behavioral therapy is important for the newly diagnosed autistic child, diagnosing and treating an abnormal zinc/copper ratio or overmethylation/undermethylation is equally important. Walsh brilliantly discusses his work and theories in the book, *Nutrient Power: Heal Your Biochemistry and Heal Your Brain* (Skyhorse Publishing; 2012). Walsh offers educational training for physicians to administer nutrient therapy. Laboratories offering Walsh's testing include Direct Healthcare Access Lab, Bio-Center Lab, and Vitamin Diagnostics. For further information: www.walshinstitute.org.

Wikipedia Gives *Townsend Letter* a Thumbs-Down

As the Internet takes an increasing role in the media and education, we thought that it would be important to see what, if anything, Wikipedia has to say about the *Townsend Letter*. It turns out that most alternative medicine, naturopathic, and nutritional magazines and journals are not cited in Wikipedia. The *Townsend Letter* is included, but the short entry is considered a "stub," meaning that the entry is just bare bones and additional discussion is invited. Unfortunately, the editors of Wikipedia clearly show a bias by permitting only a degrading observation of our publication. Rather than considering the breadth of review publications by naturopathic physicians and medical doctors, Wikipedia opts to cite a few lines from our disclaimer statement: "We encourage reports which frequently are not data-based but are anecdotal. Hence information presented may not be proven or factually correct."

This derogatory comment is followed by a terse review from Quackwatch, a website operated by Stephen Barrett, MD. Quackwatch considers the *Townsend Letter* a "not-recommended publication."

Given the open editing policy of Wikipedia, we decided that our stub listing should be edited to include discussion about the evidence-based review articles written by naturopathic physicians and medical doctors. In November 2013, we made two attempts to edit the *Townsend Letter* listing. In the first editing, we did not omit the defamatory statements noted above; instead we added two sentences regarding our authors, review articles, and citations from the literature. The sentences were successfully added. However, within 10 minutes, the edited discussion was removed and the original listing was in place. A second attempt to edit the listing led to similar results. The "editor's" comments (Wikipedia authorizes "volunteer" editors) were that we did not provide "source" materials to prove our remarks. Furthermore, the editor stated the fact that we cite the literature was not worth mentioning – despite the fact that a previous statement indicated that we are not data based.

Lest anyone might think that the *Townsend Letter* is alone in being given the thumbs-down by Wikipedia, one can see the same sort of denigration in its review of alternative medical practitioners. Well-recognized Jonathan Wright, MD, physician and author whose review of the literature is highly respected by clinicians, is also given a cursory, belittling listing. Rather than recognizing Wright's acclaim for establishing evidence supporting nutritional medicine, Wikipedia defames Wright's acceptance of unproven bioidentical hormone therapy.

Wikipedia reserves its greatest condemnation for the overall field in a lengthy entry called "Alternative Medicine." For those of you who think that alternative medicine has made great strides in the past three decades in being accepted by academia and the public, think again. In page after page, the Wikipedia editors have portrayed alternative medicine as a collection of healing arts that are not only not fact based but are driven by greedy economics and practiced by quacks. Nearly every discipline taught in naturopathic school is dismissed as being without scientific basis. The editors condemn alternative *medicine* as lacking scientific validity and also wasting a patient's time and money before getting conventional medical treatment.

I would recommend your reading of the Wikipedia "Alternative Medicine" entry. I think that it behooves the naturopathic community to edit this; Wikipedia characterizations will slow the public acceptance of naturopathy for years to come.

Jonathan Collin, MD

National College of Natural Medicine Launches New SIBO Center

National College of Natural Medicine (NCNM) has announced the opening of NCNM Clinic's SIBO Center, believed to be the first natural-medicine clinic in the US with a center dedicated to the treatment of small intestine bacterial overgrowth (SIBO), irritable bowel syndrome (IBS), and associated gastrointestinal disorders. IBS, one of the most common and hard-to-treat health conditions, is thought to affect more than 60 million Americans. A small but growing number of physicians are recognizing the significant link between IBS and SIBO.

A study published in 2000 in the *Journal of Gastroenterology* reported that 80% of those suffering with IBS symptoms of bloating, stomach pain, diarrhea, or constipation were found to actually have SIBO, a chronic bacterial infection of the small intestine. Because SIBO is often unrecognized or misdiagnosed, the symptoms can worsen without treatment. Patient demand for help with SIBO has been largely unmet, as standard Western medical treatment options often do not resolve the condition.

A New Clinical Approach to IBS

Professor Steven Sandberg-Lewis, ND, and SIBO Medical Director Allison Siebecker, ND, codevelopers of NCNM's new SIBO Center, have been collaborating with their medical counterparts on hard-to-treat gastrointestinal issues for several years. Their efforts have met with much success.

Sandberg-Lewis observed, "Medical doctors who unsuccessfully treated patients with IBS began referring them to us. Nutrition is one of the cornerstones of naturopathic medicine, so we work closely with our patients who test positive for small intestine bacterial overgrowth using various diets to maximize their nutrition without feeding the overgrowth of bacteria. After treating IBS patients with a combination of pharmaceutical or herbal antibiotics along with diet, we found that we were having very successful treatment outcomes, and the referrals began to increase."

The big shift for Sandberg-Lewis and Siebecker came when QuinTron Instrument Company Inc., based in Milwaukee, Wisconsin, donated two BreathTracker machines to NCNM Clinic to test patients for SIBO. The BreathTrackers accurately measure the amount of trace gases, such as hydrogen and methane, produced by bacteria in the small intestine. This overgrowth can interfere with the absorption of iron, vitamins, and essential fats.

Successful Case Studies

Sandberg-Lewis has patients who have suffered severely from SIBO for more than 20 years. They were referred to him after enduring a battery of tests, including upper GI endoscopies, colonoscopies, and abdominal CT scans, which came back negative, showing no cause for their acute pain and distress. Sandberg-Lewis said that within months of SIBO treatment, including the restriction or elimination of certain foods from their diets, patients' gastrointestinal distress ceases and many report much-welcomed weight loss. "As health is restored, many of our patients tell us they feel like their lives are being returned to them," he said. "I feel privileged to be able to help patients this way."

The decision to open a dedicated SIBO Center within NCNM Clinic came with the success both naturopathic doctors have had treating gastrointestinal conditions in their patients and in preventing relapses of the condition. Sandberg-Lewis explained, "We realized that by treating SIBO, we were on the leading edge of a new clinical approach to IBS and other SIBO-related health disorders, such as chronic iron deficiency anemia, rosacea, fibromyalgia, and gastroesophageal reflux."

He noted, "Patient demand for standard medical or holistic help with these diseases is woefully unmet. Few practitioners understand the basic principles of SIBO or effective treatment for IBS. Patients need access to testing, pharmaceutical and herbal management, nutritional advice and experienced guidance by qualified health-care practitioners."

About NCNM

Founded in Portland in 1956, NCNM is the oldest naturopathic medical school in North America and an educational leader in classical Chinese medicine and CAM research. NCNM offers three accredited four-year graduate medical degree programs in naturopathic and classical Chinese medicine, as well as a master of science degree in integrative medicine research and a master of science degree in nutrition. Its community clinics provide low-cost medical care throughout the Portland metropolitan area. In addition to the campus-based NCNM Clinic, NCNM practitioners attend to approximately 40,000 patient visits per year. Until July 2006, NCNM was known as the National College of Naturopathic Medicine. The name change reflects the diversity of the college's programmatic degree offerings. Visit www.ncnm.edu for more information.

◆

7th Annual Probiotic Symposium Highlights Probiotics:
Current Perspectives and Controversies

On October 25 and 26, 2013, the Institute for Medical Studies, an ACCME-accredited provider of CME for physicians, sponsored the seventh Annual Probiotic Symposium "Probiotics: Current Perspectives and Controversies," held in San Antonio, Texas. The symposium was supported in part by an unrestricted grant from Klaire Labs. A stellar international faculty presented timely talks highlighting current research and controversies in the areas of the gastrointestinal microbiota, microbiome, and clinical use of probiotics. Speakers generally emphasized the primary importance of a healthful diet in maintaining a balanced, diverse gut microbiota. Recent findings on microbial contributions to health and chronic disease were reviewed, and new discoveries of probiotic mechanisms of action were discussed. Dr. Charalabos Pothoulakis, professor of medicine at the David Geffen School of Medicine at UCLA and director of the UCLA Inflammatory Bowel Disease Center, moderated the symposium.

Dr. Russell Jaffe, internist, molecular biochemist, clinical pathologist, diagnostician, and lab director of ELISA/ACT Biotechnologies LLC and Perque LLC, opened the CME symposium by providing an insightful overview of food intolerances, a problem affecting nearly everyone at some point. He began by reviewing normal and disordered immune responses. Jaffe was tasked with reviewing

Charalabos Pothoulakis, MD, and Maria Oliva-Hemker, MD

Michael Cabana, MD, MPH

the current understanding and research on the human microbiome, the totality of microorganisms residing on and in the human body, their genetic elements (genomes), and their interactions with their host. He discussed a variety of specific biomarkers that may be used to evaluate human health.

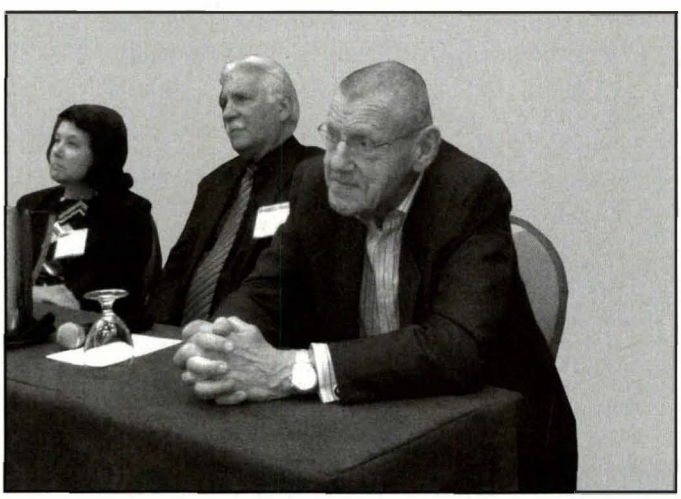
Stig Bengmark, MD, PhD, chief of surgery for over 20 years at Lund University Hospital in Sweden and now Visiting Professor at University College London, presented a lecture intriguingly titled "Dirty Cells & Leaking Membranes – a Mother of Disease." Bengmark asserted that dysbiosis, which he characterized as a malfunctioning microbiota, underlies most chronic disease by causing systemic inflammation. He emphasized that a healthy, balanced microbiota begins with a healthful diet and argued that pharmacologic agents and a healthy microbiota are incompatible. Bengmark highlighted the link between processed foods, dysbiosis, and the global epidemic of obesity. He reviewed the link between endotoxin association and an array of disorders ranging from Alzheimer's disease to cancer and pointed out that increased intestinal permeability due to dysbiosis is a major risk factor for endotoxin exposure. Bengmark suggested that a healthful diet includes raw greens and small amounts of vegetable fats and proteins, and eliminates dairy and gluten. He concluded by urging attendees to make peace with their microbiotas. ➤

Probiotic Symposium

➤

Charalabos Pothoulakis, MD, is the world's authority on the use of *Saccharomyces boulardii* for *Clostridium difficile*-associated disease. Pothoulakis focused on probiotic mechanisms of action, reviewing research performed in his laboratory showing that *S. boulardii*'s beneficial effect in *C. difficile*-associated disease is due in part to prevention of inhibitory κBα degradation. This effect prevents *C. difficile*'s toxin A from activating nuclear factor-κB (NF-κB), which is how toxin A causes colonocyte death. Pothoulakis also reported that supernatant from *S. boulardii* culture inhibits inflammatory interleukin-8 production and blocks NF-κB-mediated gene transcription. He reviewed evidence that supernatant from a multispecies probiotic formulation inhibits tumor necrosis factor (TNF) stimulation of NF-κB and presented evidence that *Lactobacillus rhamnosus* GG produces two proteins that rescue colonocytes from TNF-induced damage and apoptosis. Pothoulakis outlined ongoing research on the multiple beneficial effects of *S. boulardii* by reducing production of proinflammatory cytokines, restoring gut microbiota balance, exerting trophic effects on the intestinal mucosa, and increasing gut sIgA.

Michael Cabana, MD, MPH, professor of pediatrics, epidemiology, and biostatistics and chief of the Division of General Pediatrics at the University of California, San Francisco, provided a lucid overview of the hygiene hypothesis and the current epidemic of allergic diseases. Cabana outlined the epidemiologic relation between the reduced prevalence of infectious diseases in childhood, improved sanitation and housing, increased usage of antibiotics, and smaller family sizes and the burgeoning incidence of allergic diseases and asthma. He presented clinical research showing that probiotics administered to pregnant women for 1 month prenatally and then to infants for 6 months postpartum significantly reduced the development of atopic eczema, noting that this probiotic-mediated decrease in risk has persisted for 7 years. Cabana highlighted the difficulties encountered when reviewing clinical trials involving probiotics, emphasizing differences in probiotic microorganisms utilized, differing dosing regimens, and a variety of confounding factors such as whether a study is conducted in an urban or rural setting. Cabana proceeded to deliver a status report on his ongoing NIH-sponsored trial of probiotics to prevent the development of early markers of asthma in infants at high risk for developing asthma. To date 200 families have been recruited into this multicenter trial. He concluded by stating that probiotics are clearly effective for treating diarrhea and colic in infancy, are safe, and hold great promise for the prevention and treatment of allergic disorders and asthma. However, Cabana stated that the evidence was insufficient to recommend adding probiotics to infant formula to prevent allergic disease or food sensitivity.



Elizabeth Mumper, MD; Stephen F. Olmstead, MD; and Stig Bengmark, MD, PhD

Gerard E. Mullin, MD, associate professor of medicine and director of Integrative Nutrition Services at Johns Hopkins School of Medicine and Hospital, opened the second day of the CME symposium with a masterful review of the contribution of the gut microbiota to the development of obesity and metabolic disease and explored the potential use of probiotics to maintain a normal weight and treat metabolic syndrome. Mullin reviewed the definition and prevalence of obesity as well as the epidemiology of this expanding epidemic and its adverse health consequences. He outlined animal data supporting a role for the gastrointestinal microbiota in obesity emphasizing an imbalance between the phyla Bacteroidetes and Firmicutes. Mullen noted this relationship is variable and that *Lactobacillus acidophilus,* a member of the Firmicutes phylum, has been used to promote weight loss following gastric bypass surgery. He noted that exposure to low levels of antibiotics in the diet, such as those used in agriculture, alter the gut microbiota and may be associated with obesity. Mullen summarized animal and human studies that have used probiotics to promote weight loss. He concluded by reviewing probable mechanisms whereby probiotics may exert antiobesity effects such as induction of satiety, decreased lipid absorption, increased conjugated linoleic acid production, and increased brown tissue thermogenesis.

Maria Oliva-Hemker, MD, chief of the Division of Pediatric Gastroenterology and Nutrition at Johns Hopkins University School of Medicine, presented a lecture titled "Probiotics and Necrotizing Enterocolitis: Ready for Prime Time." Oliva-Hemker discussed the normal neonatal acquisition of the gastrointestinal microbiota and outlined factors that may disrupt an infant's microbiota and the health consequences of such disruptions. She reviewed the clinical characteristics of necrotizing enterocolitis (NEC) and the associated high mortality. She discussed the roles

of a disrupted epithelial barrier, elevated proinflammatory cytokines, intestinal mucosal inflammation, and gut dysbiosis in the pathophysiology of NEC. Oliva-Hemker emphasized that research supporting the use of probiotics has been conducted where the incidence of NEC was high, while research showing no benefit has been performed where the incidence is low. The preponderance of evidence has shown that certain probiotics consistently reduce the incidence of NEC and are safe, although the long-term effects on probiotic use in infancy remains unknown.

Dr. Elizabeth Mumper, president and CEO of the Rimland Center, which focuses on the biomedical treatment of children and young adults with autism spectrum disorders, and associate professor of medicine, pediatrics, at the Edward Via Virginia College of Osteopathic Medicine, spoke on the treatment of gastrointestinal disturbances in autism. She stated that autism spectrum disorders (ASD) are characterized by impaired communication; poor social interactions; and repetitive, restrictive, and/or stereotyped behaviors. She presented recent evidence showing that children with ASD and ileocolitis have a distinctive mucosal molecular profile that supports the presence of an ASD-associated inflammatory bowel disease variant. Mumper emphasized the high prevalence of gut disorders in autism and reviewed the evidence for complex lines of communication between the brain and the gut known as the brain–gut axis. She asserted that many behavioral problems in children with ASD may be manifestations of gastrointestinal pain in those who are nonverbal. She analogized ASD-associated gastrointestinal disease to celiac disease, in which central nervous system symptoms as a consequence of gut inflammation and immune reaction are well described. Mumper outlined the clinical approach to the biomedical treatment of children with autism. She stressed a healthful diet based on fresh, organic foods free of additives, preservatives, and dyes. She reviewed the adverse effects of fructose on health and the need to avoid foods and beverages containing high-fructose corn syrup. Mumper stated that many children will require gluten-free, casein-free diets. She highlighted the role of probiotics in eliminating gut pathogens and restoring a healthful, balanced intestinal microbiota. She accentuated the need to replenish nutritional deficiencies with supplements, maintain adequate vitamin D levels, and support methylation pathways that are often compromised in children with autism. Mumper finished her valuable presentation by emphasizing that each child is unique and therapy must be tailored to each individual. She urged attendees to look with new eyes and consider self-abusive behavior, difficulty toilet training, and insomnia as manifestations of gut pain, gastrointestinal disease, and gastrointestinal esophageal reflux.

Stephen F. Olmstead, MD, chief science officer at ProThera and Klaire Labs, reviewed the rediscovery of *Helicobacter pylori* by Warren and Marshall and its basic microbiology. Olmstead discussed a neglected aspect of the gastrointestinal microbiota, the enigmatic stomach community, and outlined research showing that *Helicobacter pylori* is part of a complex, yet-to-be-understood gastric microbiota. He presented studies showing that *H. pylori* has been associated with humans for as long as there have been humans and accompanied humankind out of Africa and into the world. He stated that while *H. pylori* can clearly cause disease such as gastritis, peptic ulcer disease, and gastric cancer, recent research suggests that colonization may have health benefits such as reducing the incidence of gastroesophageal reflux and esophageal cancer. Olmstead urged circumspection in treating *H. pylori* when there are no clinical symptoms or family history of gastric cancer and said that interventions such as probiotics, antibiofilm enzymes, antioxidants, lactoferrin, and N-acetylcysteine can be used synergistically to increase treatment success in patients requiring pharmaceutical therapy.

The CME symposium was preceded by a non-CME workshop on the afternoon of October 24. This workshop provided a review of practical, clinically relevant aspects of probiotic use, laboratory evaluation of the gastrointestinal microbiota and pathogens, and treatment of pathogenic gastrointestinal and systemic biofilms. Dr. Olmstead outlined the classification and properties of probiotic microbes and presented his professional experience using probiotics and prebiotics for a variety of gastrointestinal and systemic indications. **David Quig, PhD**, vice president, scientific support for Doctor's Data Inc., reviewed the current state of evaluating gastrointestinal microbiology using culture-dependent and DNA sequencing technologies. He noted the limitations of clinically available DNA sequencing methodologies that have been found in one study to be plagued by significant inaccuracies. Quig highlighted new enhanced culture-dependent technology, called matrix assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF/MS), which allows the use of species-specific peptidic spectra, primarily from ribosomal proteins, derived directly from intact colonies to facilitate rapid identification of gastrointestinal bacteria, mycobacteria, and fungi. Olmstead concluded the non-CME workshop by reviewing the role of microbial biofilms in health and disease and outlining approaches to disrupting pathogenic gastrointestinal biofilm to improve response rates in conditions such as systemic candidiasis sensitivity.

An audio CD set with the accompanying CME symposium syllabus is available for purchase at www.ProbioticSymposium.com or by calling 888-488-2488. The eighth Annual Probiotic Symposium will focus on the role of the gut microbiota in health and disease and its manipulation with diet, prebiotics, and probiotics and is planned to take place in fall 2014.

◆

Many Probiotic Supplements Fall Short on Listed Amounts of Helpful Organisms

Probiotic supplements and foods containing "friendly" bacteria or yeast have become popular among people hoping to improve bowel function, immunity, and even mood. But consumers might be surprised to know that many products contain only a fraction of the probiotic organisms that they claim.[1]

New tests by ConsumerLab.com found that out of 19 probiotics for people, 5 contained only 16% to 56% of the listed amounts of organisms. Levels of organisms in probiotic supplements for pets were so low as to question their usefulness – including one product apparently reformulated to provide less than 2% of the organisms that it had in the past.

"Consumers who don't do their homework with probiotics might not get what they want or think they're paying for," says Tod Cooperman, MD, president of ConsumerLab.com. "Not every product has what it claims and even those that do may not have the right type and amount of organisms for a specific condition."

Probiotics represent one of the largest and fastest-growing segments of the dietary supplement market, with 2012 sales up 24.5% to $947 million in the US, according to *Nutrition Business Journal*. A survey of over 10,000 supplement users by ConsumerLab.com in November 2012 found probiotics were used by 37.4% of women and 30.5% of men. Probiotics are also one of the most expensive dietary supplements, with a daily dose often costing more than $1.

In its new test report, ConsumerLab.com discusses the specific species of bacteria and yeasts used for the treatment of diarrhea, bowel pain, vaginal infection, cold and flu, and even anxiety. ConsumerLab.com found products listing anywhere from one to over 30 different strains of *Lactobacillus, Bifidobacterium, Streptococcus*, or *Saccharomyces* (a yeast). The quantity of organisms in products for people ranged from 100 million to more than 900 billion in a daily dose, a difference of nearly 900,000%. Much lower amounts of organisms were found in pet probiotics – amounts so small that the cost to obtain 1 billion cells (which was as little as just 1 cent for some products for people) was $120 for one pet product.

A disturbing trend identified by ConsumerLab.com among probiotic supplements is the inclusion of footnotes on labels qualifying the listed amounts of organisms to be "At time of manufacture." This disclaimer holds no value with the FDA, which expects products to contain 100% of what they list. Cooperman suggests: "Supplement companies must not only be accountable for what they claim on their labels but need to make sure their products are properly transported and stored all the way to the consumer." Probiotics are particularly sensitive to their

Scientific Research on Safety of Dr. Ohhira's Om-X Capsules Published in *Integrative Medicine Journal*

Essential Formulas Incorporated and BioBank Ltd. (Japan) announced the recent publication of an original research study on the "Safety and Tolerability of Dr. Ohhira's OM-X Capsules in Healthy Volunteers." The high level of safety and tolerability of Dr. Ohhira's was confirmed in a recent study published in the October 2013 issue of the *Integrative Medicine Journal*.[1]

Authored by Egilius L. H. Spierings, MD, PhD; Thomas Walshe, MD; and Fred Pescatore, MD, the randomized, double-blind, placebo-controlled trial was designed to the same standards used in pharmaceutical drug trials. The end points were established, adverse events were carefully monitored, and the subjects were carefully chosen to reduce variability. The trial conforms to a phase I safety trial, and the results are similar to those obtained in a previous unpublished trial of the Dr. Ohhira's OM-X product, which was conducted outside the US.[2]

The findings of the study were confirmed over a 1-month period with the participation of 51 healthy men and woman who were given one (1) Dr. Ohhira's probiotic capsule twice a day for 30 days. "The outcome of this study was no surprise as I have been recommending Dr. Ohhira's Probiotics to my patients for years with exceptional clinical results," said study coauthor Pescatore.

"Nearly 30 years of supporting science has earned Dr. Ohhira's Probiotics the respect of the scientific, academic, medical, and holistic health communities," said Michael Schoor, president and CEO of Essential Formulas Incorporated. "This study serves as additional substantiation that the high regard and trust in Dr. Ohhira's Probiotics is truly merited!"

Notes

1. Spierings ELH, Walshe T, Pescatore F. Safety and tolerability of Dr Ohhira's OM-X capsules in healthy volunteers. *Integr Med.* October 2013;12(5). Available at http://www.probioticsandyourhealth.org/research/IMCJ_12_5_spierings_38_42.pdf.
2. Gagnier J, Boon H, Rochon P, Moher D, Barnes J, Bombadier C. Reporting randomized-controlled trials of herbal interventions: an elaborated CONSORT statement. *Ann Intern Med.* 2006;144(5):364–367.

◆

environment. Once purchased, probiotics should be stored in sealed containers, away from heat, light, and humidity. Some probiotics require constant refrigeration, even if the bottle hasn't been opened.

The complete Probiotic Supplements Review is available at https://www.consumerlab.com/reviews/Probiotic_Supplements_Lactobacillus_acidophilus_Bifidobacterium/probiotics. It includes results for 41 products. ConsumerLab.com selected 22 of these, and 19 were tested at the request of their manufacturer or distributor through CL's Quality Certification Program and are included for having passed the same testing.[2] Two products similar to one that passed testing are also listed. Products included in the report are:

21st Century High Potency Acidophilus Probiotic Blend

Accuflora Advanced CD Probiotic Acidophilus

Align Probiotic

Best Pet Health Probiotics with Wild Alaskan Salmon Oil for Dogs and Cats

Culturelle

CVS/pharmacy Probiotic Acidophilus

Dr. David Williams Probiotic Advantage

Dr. Mercola Complete Probiotics

Enzymatic Therapy Acidophilus Pearls

FloraStor Kids

Garden of Life Raw Probiotics Ultimate Care

Jarrow Formulas Jarro-Dophilus EPS

Jarrow Formulas Senior Jarro-Dophilus

Kyo-Dophilus

Lee Swanson

Genetic Designed Nutrition Ultimate Probiotic Formula

Metagenics UltraFlora Advanced

Nature Made Digestive Health Probiotic

Nature's Answer For Kids Probiotics

Nature's Bounty Advanced Probiotic 10

Nature's Plus Animal Parade AcidophiKidz

NOW Gr8-Dophilus

Nutri-Health Flora Source Multi Probiotic

Nutrition Now PB 8

Only Natural Pet Probiotic Blend

Petco Digestive Enzymes & Probiotics For Dogs

Phillips Colon Health

Puritan's Pride Probiotic 10

Renew Life Ultimate Flora

Renew Life Ultimate Flora Adult Formula

Renew Life Ultimate Flora Critical Care

RepHresh Pro-B

Rexall Probiotic Acidophilus

Schiff Digestive Advantage Daily Probiotic

Sedona Labs iFlora Multi-Probiotics,

Solgar Advanced Multi-Billion Dophilus

Spring Valley Probiotic Acidophilus

TruBiotics

Trunature (Costco) Chewable Probiotic

UAS Laboratories DDS

USANA Probiotic

Vitacost Probiotic

Vitamin World Probiotic 10

VSL#3

The report identifies which products contained what they claimed; provides product comparisons on types and amounts of probiotic organisms and price; and includes information about the usage, dosage, and potential side effects of probiotics.

ConsumerLab.com is a leading provider of consumer information and independent evaluations of products that affect health and nutrition. Membership to ConsumerLab.com is available online, providing immediate access to reviews of more than 1000 products from over 400 brands. The company is privately held and based in Westchester, New York. It has no ownership from or interest in companies that manufacture, distribute, or sell consumer products. ConsumerLab.com is affiliated with PharmacyChecker.com, which helps consumers evaluate online pharmacies and compare drug prices, and MedicareDrugPlans.com, which reviews and rates Medicare Part D plans.

Notes

1. Product review: probiotics for adults, children and pets [Web page]. ConsumerLab.com. Dec. 21, 2013. https://www.consumerlab.com/reviews/Probiotic_Supplements_Lactobacillus_acidophilus_Bifidobacterium/probiotics.
2. About ConsumerLab.com: Quality Certification Program [Web page]. ConsumerLab.com. https://www.consumerlab.com/aboutcl.asp#certification.

◆

Antivitamin Publications: Misinformation Presented As Truth

by Rolf Hefti

Recently, some antisupplement publications by a prominent spokesman for the medical industry, Paul A. Offit, MD, received broad mainstream media coverage.[1–4]

Let's take a closer look at some of the studies that Offit proffers to substantiate his generalized antivitamin charges.

Claim: Offit claimed that a study from 1942 had already refuted the proposition made by dual Nobel Prize winner Linus Pauling, PhD (1901–1994), during the 1970s that high-dose vitamin C supplements can ameliorate the unpleasant experience of the common cold.[3,5]

Fact: The cited study actually showed a significant decrease in the severity and duration of symptoms of the common cold with the use of moderate- to high-dose vitamin C supplements.[5,6]

Claim: Offit dismissed Pauling's claim that high-dose vitamin therapy is useful in the treatment of cancer, calling Pauling "arguably the world's greatest quack."[3] Offit referred to two Mayo clinic studies that asserted to have replicated, and refuted, Pauling's (and a colleague's) studies which demonstrated impressive supplement benefits against cancer.[7–10]

Fact: Pauling described in detail that the two Mayo clinic papers were not following his (and his colleague's) study procedures, thus those studies were meaningless and irrelevant in debunking his vitamin claims.[11] Offit fails to mention this crucial point, thus presenting an established scientific falsehood as a scientific fact. Recent research has confirmed that vitamin C therapy is beneficial in the fight against cancer if the proper protocols are followed.[12]

Claim: Offit claimed that only four types of supplements (calcium, folic acid, omega-3 fatty acid, and vitamin D), "might be of value for otherwise healthy people."[1–3]

Fact: Many dietary supplements are of value for our ever-increasingly unhealthy population, validated by sound scientific data, including randomized controlled studies.[13,14,24–27]

Claim: Offit claims that taking megavitamins (doses above RDA amounts) could increase the risk of cancer, heart disease, and mortality in "otherwise healthy" consumers. He advises the public to "stop taking vitamins."[1–4]

Fact: Several of the studies that Offit cited are either misleading or flawed. For example, some findings only applied to chain-smokers who also consumed alcohol, elderly people, or gravely ill people rather than "otherwise healthy" people.[20–23] Contrary to Offit's claim, many meaningful studies have documented that nutritional supplements, especially in large doses, significantly reduce the risk of heart disease, cancer, and mortality in both "otherwise healthy" and sick people.[13–19,24–29]

Looking at any annual report of the American Association of Poison Control Centers shows very few deaths from supplement consumption.[30] Far more people die from the intake of aspirin, commonly perceived as a rather safe substance. Most disturbing, scientific data from medical journals and government health statistics reveal that the proper consumption of pharmaceutical medications kills over 100,000 people every year in the US alone.[31,32]

Conclusion

Offit's vitamin-bashing accusations have little to do with accuracy. Politics, or profit, provides the most plausible explanation for such unfounded attacks.

The field of alternative medicine has grown dramatically since the 1990s, particularly the supplement industry. Alternative medicine's products and services have increasingly become a significant competitor to the big business of orthodox medicine, which is aimed instead at the treatment of long-term disease. Alternative medicine cuts into the bottom line of the medical industry's profit-generating model of disease care.

Offit's sweeping, nonscientific generalizations against the use of dietary supplements appear to be an attempt to diminish the influence of a steadily growing competitor. Above all, Offit's incorrect and biased antisupplement accusations reaffirm the importance of following first principles to arrive at the whole truth: take a look at the facts yourself, and do not put your trust in authorities.

For Further Reading

An extended version of Rolf Hefti's article is available on his website at www.supplements-and-health.com/vitamin-benefits.html.

Notes

1. Offit PA. Do *You Believe in Magic? The Sense and Nonsense of Alternative Medicine*. Harper; 2013.
2. Offit PA. *Killing You Softly: The Sense and Nonsense of Alternative Medicine*. Fourth Estate; 2013.
3. Offit PA. Vitamins: stop taking the pills: Vitamin supplements are good for you, right? Wrong, says a new book – they're a multibillion-pound con and in high doses can increase your risk of heart disease and cancer. *Guardian*. 7 June 2013.
4. Offit PA. Don't take your vitamins. *New York Times*. 8 June 2013.
5. Cowan DW, Diehl HS, Baker AB. Vitamins for the prevention of colds. *J Am Med Assoc*. 1942;120:1267–1271.
6. Pauling L. Early evidence about vitamin C and the common cold. *Orthomol Psychiatry*. 1974;3(3):139–151.
7. Creagan ET, Moertel CG, O'Fallon JR, et al. Failure of high-dose vitamin C (ascorbic acid) therapy to benefit patients with advanced cancer. A controlled trial. *N Engl J Med*. 1979 Sep 27;301(13):687–690.
8. Moertel CG, Fleming TR, Creagan ET, Rubin J, O'Connell MJ, Ames MM. High-dose vitamin C versus placebo in the treatment of patients with advanced cancer who have had no prior chemotherapy. A randomized double-blind comparison. *N Engl J Med*. 1985 Jan 17;312(3):137–141.
9. Cameron E, Pauling L. Supplemental ascorbate in the supportive treatment of cancer: Prolongation of survival times in terminal human cancer. *Proc Natl Acad Sci U S A*. 1976 Oct;73(10):3685–3689.

10. Cameron E, Pauling L. Supplemental ascorbate in the supportive treatment of cancer: reevaluation of prolongation of survival times in terminal human cancer. *Proc Natl Acad Sci U S A*. 1978 Sep;75(9):4538–4542.
11. Pauling L. *How to Live Longer and Feel Better*. Oregon State University Press; 1986, 2006.
12. Ohno S, Ohno Y, Suzuki N, Soma G, Inoue M. High-dose vitamin C (ascorbic acid) therapy in the treatment of patients with advanced cancer. *Anticancer Res*. 2009 Mar;29(3):809–815.
13. Canner PL, Berge KG, Wenger NK, et al. Fifteen year mortality in Coronary Drug Project patients: long-term benefit with niacin. *J Am Coll Cardiol*. 1986 Dec;8(6):1245–1255.
14. Berge KG, Canner PL. Coronary drug project: experience with niacin. Coronary Drug Project Research Group. *Eur J Clin Pharmacol*. 1991;40 Suppl 1:S49–S51.
15. Lee IM, Cook NR, Gaziano JM, et al. Vitamin E in the primary prevention of cardiovascular disease and cancer: the Women's Health Study: a randomized controlled trial. *JAMA*. 2005 Jul 6;294(1):56–65.
16. Gaziano JM, Sesso HD, Christen WG, et al. Multivitamins in the prevention of cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA*. 2012 Nov 14;308(18):1871–1880.
17. Clark LC, Combs GF Jr, Turnbull BW, et al. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin. A randomized controlled trial. Nutritional Prevention of Cancer Study Group. *JAMA*. 1996 Dec 25;276(24):1957–1963.
18. Fawzi WW, Msamanga GI, Spiegelman D, et al. A randomized trial of multivitamin supplements and HIV disease progression and mortality. *N Engl J Med*. 2004 Jul 1;351(1):23–32.
19. Shimizu M, Fukutomi Y, Ninomiya M, et al. Green tea extracts for the prevention of metachronous colorectal adenomas: a pilot study. *Cancer Epidemiol Biomarkers Prev*. 2008 Nov;17(11):3020–3025.
20. The effect of vitamin E and beta carotene on the incidence of lung cancer and other cancers in male smokers. The Alpha- Tocopherol, Beta Carotene Cancer Prevention Study Group. *N Engl J Med*. 1994 Apr 14;330(15):1029–1035.
21. Omenn GS, Goodman GE, Thornquist MD, et al. Effects of a combination of beta carotene and vitamin A on lung cancer and cardiovascular disease. *N Engl J Med*. 1996 May 2;334(18):1150–1155.
22. Miller ER III, Pastor-Barriuso R, Dalal D, Riemersma RA, Appel LJ, Guallar E. Meta-analysis: high-dosage vitamin E supplementation may increase all-cause mortality. *Ann Intern Med*. 2005 Jan 4;142(1):37–46.
23. Lonn E, Bosch J, Yusuf S, et al.; HOPE and HOPE-TOO Trial investigators. Effects of long-term vitamin E supplementation on cardiovascular events and cancer: a randomized controlled trial. *JAMA*. 2005 Mar 16;293(11):1338–1347.
24. White E, Shannon JS, Patterson RE. Relationship between vitamin and calcium supplement use and colon cancer. *Cancer Epidemiol Biomarkers Prev*. 1997 Oct;6(10):769–774.
25. Watkins ML, Erickson JD, Thun MJ, Mulinare J, Heath CW Jr, Multivitamin use and mortality in a large prospective study. *Am J Epidemiol*. 2000 Jul 15;152(2):149–162.
26. Harris HR, Bergkvist L, Wolk A, Vitamin C intake and breast cancer mortality in a cohort of Swedish women. *Br J Cancer*. Epub 2013 Jun 4. doi:10.1038/bjc.2013.269.
27. Enstrom JE, Kanim LE, Klein MA. Vitamin C intake and mortality among a sample of the United States population. *Epidemiology*. 1992 May;3(3):194– 202.
28. Tovar J, Nilsson A, Johansson M, et al. A diet based on multiple functional concepts improves cardiometabolic risk parameters in healthy subjects. *Nutr Metab (Lond)*. 2012 Apr 2;9:29. doi:10.1186/1743-7075-9-29.
29. Gaziano JM, Sesso HD, Christen WG, et al. Multivitamins in the prevention of cancer in men: the Physicians' Health Study II randomized controlled trial. *JAMA*. 2012 Nov 14;308(18):1871–1880.
30. American Association of Poison Control Centers, Annual Report 1983–2008.
31. Starfield B. Is US health really the best in the world? *JAMA*. 2000 Jul 26;284(4):483–485.
32. Dean C, Feldman M, Rasio D, Smith D, Null G. Death by medicine. Independent review commissioned by the Nutrition Institute of America; 2003.

Nutritional Medicine is Orthomolecular Medicine

Orthomolecular medicine uses safe, effective nutritional therapy to fight illness. For more information: http://www.orthomolecular.org.

The peer-reviewed Orthomolecular Medicine News Service is a nonprofit and noncommercial informational resource.

Find a Doctor

To locate an orthomolecular physician near you: http://orthomolecular.org/resources/omns/v06n09.shtml.

This article is reprinted courtesy of Orthomolecular Medicine News Service. To subscribe at no charge: http://www.orthomolecular.org/subscribe.html. For previous news releases: http://orthomolecular.org/resources/omns/index.shtml.

◆

Ancient Tooth Decay DNA Reveals Effects of Changing Diets

DNA from tartar preserved on the teeth of ancient skeletons has revealed the consequences of changes in human diet and health from the Stone Age to modern day.

The ancient genetic record reveals the negative impact and changes that farming and manufactured foods have had on the evolution of our oral bacteria.

An international team, led by the University of Adelaide's Centre for Ancient DNA (ACAD), along with the University of Aberdeen and the Sanger Institute at Cambridge, published the results in *Nature Genetics*.

Project coleader Professor Keith Dobney, Sixth Century Chair of Human Palaeoecology at the University of Aberdeen, said: "This provides us with a completely new window on how people lived and died in the past. Knowing the real genetic history of diseases we still suffer from today will help us better understand and even treat them. Being able to track them through time has huge implications for understanding the origins and history of human health – making the archaeological record extremely relevant and important to modern-day medics and geneticists."

The researchers extracted DNA from tartar (calcified dental plaque) from 34 prehistoric northern European human skeletons, and traced changes in the nature of oral bacteria from the last hunter-gatherers, through the first farmers to later Bronze Age and medieval times.

Study leader Professor Alan Cooper, director of ACAD, said: "This is the first record of how our evolution over the last 7500 years has impacted the bacteria we carry with us and their important health consequences. Oral bacteria in modern man are markedly less diverse than historic populations, and this is thought to contribute to chronic oral and other disease in postindustrial lifestyles."

The development of farming around 10,000 years ago caused a major shift in human diet, resulting in a significant impact on our health. The same was true of the much more recent move to eating highly processed flour and sugar, both of which have contributed directly to health problems that we see today such as tooth decay, diabetes and heart disease.

Cooper added: "The composition of oral bacteria changed markedly with the introduction of farming, and again around 150 years ago. With the introduction of processed sugar and flour during the Industrial Revolution, we can see a dramatically decreased diversity in our oral bacteria, allowing domination by caries-causing strains. The modern mouth basically exists in a permanent disease state."

Ironically, the introduction of sugar and carbohydrates contributed to the increase in dental plaque that now holds the vital information the scientists are studying.

Dobney added: "Until now we've had to rely mainly on indirect evidence or historical documents to tell us what people ate and what kind of illnesses they suffered from in the past. But now we can directly extract genetic information on diet and health from the tartar on teeth – which is very abundant and well-preserved in the archaeological record – we have a totally new source of unique information stretching back thousands of years."

Dr. Julian Parkhill, coauthor from the Wellcome Trust Sanger Institute, said: "We have shown that genetic sequencing is not restricted to modern samples. Sequencing the oral microbiota of different populations, over the ages, from across the world will tell us how different diets have affected human health, opening a whole new area of research."

Dobney and Cooper have been working on the project for the past 17 years, but only since 2007 has it been possible to carry out the research as a result of ACAD's ultraclean laboratories and strict decontamination and authentication protocols.

The research team is now expanding studies through time and around the world, including other species such as Neanderthals.

◆

Shorts

briefed by Jule Klotter
jule@townsendletter.com

Enriched Environments, Epigenetics, and Offspring

Enriched environments produce epigenetic changes in young mice – both male and female – that affect the next generation, according to recent studies. Mice raised in an environment that encourages curiosity, exploration, social interaction, and physical activity produce offspring that are less stressed, have brain changes that promote memory and learning, and have higher birth weights compared with offspring from mice raised in isolation or conventional laboratory cages.

In a 2009 study, Junko A. Arai and colleagues exposed 15-day-old *ras-grf* mice to an enriched environment for two weeks. *Ras-grf* mice have defective long-term potentiation (LTP), "a form of synaptic plasticity that is known to be important for learning and memory." In previous studies, the researchers had observed that this temporary exposure to an enriched environment leads to normal LTP in these mice for about 2 months before dropping to defective LTP levels found in unexposed *ras-grf* mice. In this study, the researchers looked at the offspring of enriched mice that were conceived while LTP levels were still normal. They observed that the offspring of female rats exposed to an enriched environment during their adolescence displayed normal LTP even when raised in a conventional environment. Unlike the parents, however, the offspring's LTP levels declined before they were old enough to bear young; the genes themselves had not changed. Arai and colleagues say that environment affected the epigenetics; that is, how the genes are expressed. "The idea that the effect of enrichment in the mother can be passed on to offspring during embryogenesis is consistent with a behavior study from >20 years ago," write the authors, "which showed that exposure of pregnant rats to an enriched environment enhances the maze learning abilities of their offspring, even if the offspring are raised by non-enriched foster mothers" (Kiyono et al. 1985).

Early environment of male mice also has an effect on offspring, according to a 2012 study led by Rahia Mashoodh at Columbia University (New York). Paternal genes in rodents affect a pup's rate of ultrasonic vocalizations, suckling ability, and locomotor activity. These behaviors govern the amount of maternal care that a pup receives. In this experiment, female mice who mated with males raised in an enriched environment exhibited "significantly higher levels of pup nursing across the first week postpartum ... and marginally higher levels of pup licking" than females mated with mice raised in isolation. At weaning, the weight of offspring from enriched males was 0.98 grams greater, on average, than isolated males' offspring. "This growth effect was observed in both male and female offspring and was significant after controlling for maternal care," say the authors.

We know that nutrition and exercise can affect gene expression. The quality of one's environment has epigenetic effects as well.

Arai JA, Li S, Hartley DM, Feig LA. Transgenerational rescue of a genetic defect in long-term potentiation and memory formation by juvenile enrichment. *J Neurosci.* February 4, 2009;29(5):1496–1502. Available at www.jneurosci.org/content/29/5/1496.long. Accessed November 14, 2013.

Mashoodh R, Franks B, Curley JP, Champagne FA. Paternal social enrichment effects on maternal behavior and offspring growth. *PNAS.* October 16, 2012;109(suppl.2):17232–17238. Available at www.pnas.org/cgi/doi/10.1073/pnas.1121083109. Accessed November 14, 2013.

Food Sensitivities, Elimination Diets, and Weight Gain

The idea that sensitivities to common foods such as wheat, dairy, eggs, and corn cause weight gain is gaining attention. British doctor John Mansfield in his book *Six Secrets of Successful Weight Loss* asserts that food sensitivities are "'by far the commonest single cause of weight gain. ... '" The cover of *The Virgin Diet,* written by certified nutritionist J. J. Virgin, says "Why Food Intolerance is the *Real* Cause of Weight Gain." Virgin's program has seven foods to avoid: gluten, soy, dairy, eggs, corn, peanuts, and most sweeteners. Mansfield adds yeast, coffee, tea, potatoes, chocolate, oranges, onions, beef, and pork to the list of foods not tolerated by some people.

I was unable to find any research that links food sensitivity specifically to weight gain. Medical research is just beginning to allow the possibility that common foods can produce symptoms without inciting IgE antibodies.

For example, a double-blind, randomized, placebo-controlled study, led by J. R. Biesiekierski, reported that gluten can cause gastrointestinal symptoms in people without celiac disease; but the authors had no idea why: "'Non-celiac gluten intolerance' may exist, but no clues to the mechanism were elucidated." So, the theory that food intolerance contributes to weight gain may be true; research studies have just not been performed.

The elimination diet is most valuable for people with chronic health problems or for those who feel fatigued and sluggish. The diet allows people to identify foods that cause symptoms or reactions. A February 2011 *Lancet* study, for example, showed that a strict elimination diet is a valuable technique for identifying foods that cause ADHD symptoms in children. The elimination diet also gets people off of processed foods – at least temporarily. Most processed foods contain one or more of the foods commonly linked to sensitivities. Could the weight loss attributed to elimination diets be the result of avoiding processed foods and eating whole foods instead?

Biesiekierski JR, Newnham ED, Irving PM et al. Gluten causes gastrointestinal symptoms in subjects without celiac: a double-blind randomized placebo-controlled trial. *Am J Gastroenterol*. March 2011;106(3):508–514. Available at www.researchgate.net. Accessed December 5, 2013.

Hodgekiss A. Food sensitivity could be stopping you lose weight, says doctor who also claims low-fat diets can make you HEAVIER. October 11, 2012. *Daily Mail*. Available at www.dailymail.co.uk. Accessed November 14, 2013.

Virgin JJ. *The Virgin Diet*. Don Mills, Ontario, Canada: Harlequin Enterprises; 2012.

Family Planning

Health care for all children begins with women's access to family planning and reliable contraception methods. "A woman's ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy," says the World Health Organization. Babies conceived at least 18 months (but less than 5 years) after a sibling's birth are less likely to be premature or be small for their gestational age, according to Mayo Clinic. Despite the importance of family planning, many medical schools do not include contraception, options counseling, or abortion procedures in their OB/GYN or family medicine residency programs. Medical Students for Choice is an organization that assists medical students who want to improve family planning instruction at their college (www.msfc.org).

Restricting access to family planning measures – whether through budget cuts or through law – has consequences beyond an infant's birth weight. When Romania restricted access to contraception in 1957, legal abortion rates soared, according to an article by Mihai Horga and colleagues: "By the mid-1960s, there were [1,100,000] abortions performed each year in Romania, a lifetime average of 3.9 per woman, the highest number ever recorded." Then Nicolae Ceausescu came to power and restricted abortion in October 1966 to women over age 45 years, those with four or more children, pregnancies resulting from rape or incest, pregnancies that threatened the woman's life, and pregnancies in which the fetus had a congenital defect. Abortion rates plummeted, and fertility rates nearly doubled from 1.9 to 3.6 births per woman in 1967–1968. Women who could not get birth control pills or condoms through the black market turned to illegal abortion. "Maternal mortality from unsafe abortion skyrocketed to an incredible 147 per 100,000 live births," say Horga and colleagues. By 1985–1986, the birth rate had declined to 2.3. When abortion was again legalized, maternal mortality fell within the first year, but abortion rates climbed. Family planning clinics and contraception became available in the 1990s, and abortion rates began to fall from 163.6 abortions per 1000 women in 1990, to 10.1 in 2010. Maternal mortality also decreased: 147 per 100,000 live births in 1989 to 5.2 in 2010.

"The reasons [US] women give for having an abortion underscore their understanding of the responsibilities of parenthood and family life," according to Guttmacher Institute. For many, it is an economic necessity. About 61% of the women already have one or more children, and most are low income: 42% of women obtaining abortions had income below the 2008 poverty level ($10,830 per single person plus $3600 for each additional person: http://aspe.hhs.gov/poverty/08poverty.shtml) and 27% made between 100% and 199% of the poverty level. About 75% of women decide to abort because having a baby (not to mention raising the child) would compromise their ability to work, continue school, or care for dependents. Marital difficulties and lack of support from the partner were other major reasons that women seek abortions. Most abortions (88%) occur in the first 12 weeks of pregnancy – long before the fetus is viable outside the womb. The best way to reduce abortions rates, as President Jimmy Carter realized, is to address the reasons that women choose abortions: lack of family planning resources and poverty.

Guttmacher Institute. Facts on induced abortion in the United States [Web page]. October 2013. Available at www.guttmacher.org. Accessed November 15, 2013.

Horga M, Gerdts C, Potts M. The remarkable story of Romanian women's struggle to manage their fertility. *J Fam Plann Reprod Health Care*. 2013;39:2–4. Available at www.west-info.eu/files/Report-Romania1.pdf. Accessed December 4, 2013.

Wind R. Services provided at family planning centers yield myriad public health benefits [online press release]. August 7, 2013. www.guttmacher.org/media/nr/2013/08/07/index.html. Accessed November 15, 2013.

——. New U.S. study highlights need to include men in strategies to prevent unintended pregnancy [online press release]. June 24, 2013. www.guttmacher.org/media/nr/2013/06/24/index.html. Accessed November 15, 2013.

World Health Organization. Family planning [Web page]. http://www.who.int/topics/family_planning/en. Accessed December 4, 2013.

Intermittent Fasting for Weight Loss

Monitoring calorie intake seven days a week becomes a constant battle for many who want to lose or maintain weight. Some people are finding intermittent fasting – in one form or another – to be a sustainable alternative. Intermittent fasting, as popularized by Dr. Michael Mosley's book *The Fast Diet*, consists of eating about one-fourth of the recommended calories in the form of nutritious foods (about 500 for women and 600 for men) on two nonconsecutive days and eating normally during the rest of the week. The program, the subject of a BBC documentary that appeared on US public television in April 2013, helped Mosley and his patients lose weight, improve glucose metabolism, and

➤

lower cholesterol. Mosley chose to undertake a fasting program because of scientific research that has shown its multiple health benefits. Studies, primarily with animals, show that fasting increases longevity; decreases oxidative stress and inflammation; and improves biomarkers linked to cancer, diabetes, cardiovascular disease, and dementia, according to a Canadian Medical Association article.

Another form of intermittent fasting for weight loss is to eat only during specific hours. The daily fast should last at least 16 hours to get the metabolic benefit. After 16 hours, the body begins to burn fat for energy, according to Mark Mattson, senior investigator for the National Institute on Aging. An example of this type of diet would be to eat only between 9 or 10 a.m. and 5 p.m.

During most calorie-restricting diets, muscle as well as fat is lost. Research by Dr. Krista Varady and by Dr. Michelle Hoffman found that 75% of weight lost with standard diets is from decreased fat and 25% is from decreased muscle, according to Mosley. With intermittent fasting, between 85% and 100% of weight lost is due to fat loss. Losing muscle, the body's biggest calorie burner, makes it more difficult to prevent weight gain.

Intermittent fasting is not recommended for people who are taking beta blockers or diabetes medication or for those with hypoglycemia or a history of eating disorders.

Collier R. Intermittent fasting: the science of going without. *Can Med Assoc J*. April 8, 2013. Available at www.cmaj.ca/content/early/2013/04/08/cmaj.109-4451.full.pdf. Accessed November 14, 2013.

Franklin NC. Different types of intermittent fasts [online article]. Answers. http://nutrition.answers.com/diets/different-types-of-intermittent-fasts. Accessed November 22, 2013.

Melnick M. Intermittent fasting: does it work? [online article]. Huffington Post. April 11, 2013. Available at www.huffingtonpost.com. Accessed November 14, 2013.

——. Michael Mosley: 'The Fast Diet" author on self-experimentation, fasting and coming to America [online article]. Huffington Post. March 29, 2013. Available at www.huffingtonpost.com. Accessed November 14, 2013.

Lactobacillus Overgrowth

Cytolytic vaginosis and lactobacillosis, two recently identified disorders characterized by *Lactobacillus* overgrowth, are often mistaken for vulvovaginal candidiasis. Symptoms include an odorless, white vaginal discharge; vulvar itching; and stinging/burning pain, particularly with urination. "These symptoms are often cyclical in nature, being more pronounced during the luteal phase and reaching a peak shortly before menses," writes Robin L. Hills, NP.

Accurate diagnosis requires microscopic examination and pH analysis. Cytolytic vaginosis has a low pH (3.5–4.5), a large number of intermediate epithelial cells, cellular debris from cytolyzed epithelial cells, and excessive lactobacilli. "Pseudohyphae, spores, trichomonads and clue cells are absent, and leukocytes are scarce or absent," says Hills. Lactobacillosis also has a low pH and a large number of intermediate epithelial cells but no cytolyzed cells or cellular debris. It also has long, segmented chains of lactobacilli.

Hills offers several measures for decreasing the numbers of lactobacilli, thereby increasing pH and relieving symptoms. Avoiding tampon use during menstruation is the first measure, since menstrual flow naturally raises pH. Sitz baths with baking soda will relieve symptoms. Douching with a baking soda solution can also help; but douching, particularly in the absence of symptoms, can alter the environment to the point of promoting bacteria vaginosis. Hills says that patients should refrain from sexual activity during initial treatment and when symptoms occur. If these self-care measures do not eliminate symptoms, beta-lactamase antibiotic therapy (Augmentin) or doxycycline (Doryx) can be prescribed.

Hills RL. Cytolytic vaginosis and Lactobacillosis. *Adv NPs PAs*. February 1, 2007;15(2):45. Available at http://nurse-practitioners-and-physician-assistants.advanceweb.com/Article/Cytolytic-Vaginosis-And-Lactobacilliosis.aspx. Accessed November 10, 2013.

Long-Term Bisphosphonate Risk-Benefit

Three to five years of bisphosphonate treatment increases bone density by slowing bone resorption and reduces the rate of osteoporotic fractures, but the value of longer treatment is being questioned at the US Food and Drug Administration. The agency recently conducted a systematic review of long-term bisphosphonate efficacy based on three extension trials. Marcea Whitaker, MD, and colleagues summarized the results in a *New England Journal of Medicine* article (May 31, 2013). The review

focused primarily on the Fosamax Fracture Intervention Trial Long-Term Extension (FLEX).

All participants in FLEX had received Fosamax during a previous five-year study that compared Fosamax with placebo. During the extension trial, the FLEX participants either continued to use Fosamax or were given a placebo for an additional 5 years.

Although the initial study showed significantly less osteoporotic fracture incidence in the treatment group (10.6%) compared with the placebo group (21.0%), the extension trial did not: continuous Fosamax treatment had a fracture incidence of 17.7% compared with 16.9% for those who were switched to placebo. Pooled data from all three extension trials in the FDA review showed that " ... patients who received continuous bisphosphonate treatment for 6 or more years result in fracture rates ranging from 9.3 to 10.6%, whereas the rate for patients switched to placebo is 8.0 to 8.8%," according to Whitaker et al. "These data raise the question of whether continued bisphosphonate therapy imparts additional fracture-prevention benefit, relative to cessation of therapy after 5 years."

Efficacy is only half of the risk-benefit equation. Bisphosphonates have multiple adverse effects. For years, the FDA has been aware of serious but rare adverse events such as atypical femur fractures, osteonecrosis of the jaw, atrial fibrillation, and esophageal cancer. Gastric disorders (i.e., dyspepsia, abdominal pain, nausea, and gastritis) and musculoskeletal pain are more common side effects, according to a 2012 literature review conducted by Pooneh Salari and Mohammed Abdollahi. People's Pharmacy has received multiple reports of muscle aches and spasms, deep bone pain, and back and joint pain from readers who attribute their symptoms to bisphosphonate use. These problems, along with tingling in extremities, fatigue, flu-like feelings, headache, dizziness, skin irritation, and eye damage, are recognized by bisphosphonate manufacturers as possible adverse effects.

At this point, practitioners have no clear guidelines for weighing benefit vs. risk. It does appear, however, that the benefits decrease and the risks increase with long-term bisphosphonate treatment. As bisphosphonate labeling states, "'The optimal duration of use has not been determined. All patients on bisphosphonate therapy should have the need for continued therapy re-evaluated on a periodic basis.'"

Reclast side effects incapacitate patient [Web page]. The People's Pharmacy. April 15, 2013. http://www.peoplespharmacy.com/2013/04/15/reclast-side-effects-incapacitate-patient. Accessed November 14, 2013.

Salari P, Abdollahi M. Long term bisphosphonate use in osteoporotic patients; a step forward, two steps back. *J Pharm Pharmaceut Sci.* 2012;15(2):305–317. Available at www.cspsCanada.org. Accessed November 14, 2013.

Whitaker M, Guo J, Kehoe T, Benson G. Bisphosphonates for osteoporosis – where do we go from here? *N Engl J Med.* May 31, 2012;366(22):2048–2051.

Breast Hypoplasia and Breast-Feeding

Many women worry that they are not producing enough breast milk to feed their infants; but, for a small percentage of women, that worry is based in reality. To their disappointment and frustration, they are physically

➤

➤

unable to produce enough milk to meet their babies' needs. Thyroid disorders, polycystic ovary syndrome, Sjögren's syndrome, and abnormal postpartum bleeding due to retained placenta tissue have all been linked to low milk supply. The most common causes, however, are milk ducts damaged during breast surgery and insufficient milk-producing glandular tissue (IGT).

Insufficient glandular tissue is impossible to diagnose before breast-feeding is attempted. Different-sized breasts (asymmetry), overly large and bulbous areolae, and long, tubelike breasts indicated the possibility of IGT, but not all women with one or more of these characteristics have difficulty producing milk, according to Australian Breastfeeding Association. Breast size, which pertains to fatty rather than glandular tissue, has nothing to do with IGT. The association suggests that women with signs of IGT contact a lactation consultant before giving birth, to discuss options. Some options are discussed in "Living with Chronic Low Milk Supply: A Basic Guide," posted by MOBI Motherhood International. The article explains factors that contribute to low milk supply, ways to increase the supply, and how to build a nursing relationship despite a low milk supply.

As the Australian Breastfeeding Association states, "Breastfeeding is so much more than the amount of milk a mother is able to make. ... ."

Australian Breastfeeding Association. Insufficient glandular tissue (breast hypoplasia) [online article]. May 2013. https://www.breastfeeding.asn.au/bfinfo/insufficient-glandular-tissue-breast-hypoplasia. Accessed November 15, 2013.

Cannon A, Jacobson H, Morgan B [online article]. Living with chronic low milk supply: a basic guide. MOBI Motherhood International. www.mobimotherhood.org/MM/portal-lowmilksupply.aspx. Accessed November 15, 2013.

Schoenberg N. Breast-feeding agonizing for some new mothers. *Spartanburg Herald Journal*. April 10, 2013.

Strontium for Osteoporosis

European Medicines Agency released a new warning about the use of strontium ranelate (Protelos) for the treatment of osteoporosis in April 2013. (The drug has not been approved in the US or Canada.) People taking the pharmaceutical have an increased risk of developing serious heart problems, including heart attack: "relative risk compared with placebo was 1.6 (95% CI 1.07-2.38)." The drug also increases the risk of venous thromboembolism. The agency recommends that strontium ranelate be given only to postmenopausal women with high fracture risk and at-risk men. People with uncontrolled hypertension, ischemic heart disease, peripheral arterial disease cerebrovascular disease, or a history of these disorders should avoid taking strontium ranelate.

Strontium ranelate inhibits bone loss; and, unlike bisphosphonates, it also increases bone formation. A year-long, double-blind study, presented at the 2011 European Congress on Osteoporosis and Osteoarthritis, found that strontium ranelate "exerts significantly greater bone-forming activity than the bisphosphonate alendronate [Fosamax]," writes Megan Brooks for Medscape. Unlike studies that depend on DEXA (X-ray) to determine bone density, this study used bone biopsies. DEXA evaluations tend to overrate bone mineral density in women taking strontium. Strontium has a greater atomic weight than calcium: " ... much of the increase [in BMD] is a purely physical effect due to the increased attenuation of X-ray when some of the calcium in bone is replaced by strontium" (Blake et al.).

Strontium ranelate also decreases fracture risk, but its effectiveness appears to decline with continued use. In his review of a 2008 double-blind study, Dr. Alan R. Gaby says, "The available evidence indicates that high-dose strontium therapy [two grams per day] for up to five years reduces the incidence of [new vertebral] fractures, but the benefit appears to diminish after the first year of treatment."

Although strontium ranelate is not legal in North America, supplements containing high doses of strontium, in the form of salts (e.g., strontium citrate), can be bought over the counter (OTC). These high-dose preparations contain far more strontium than the 1 to 3 milligrams per day provided by food. Positive strontium ranelate studies are often used to promote strontium salts as an alternative to bisphosphonates. A 2013 rat study, using ANOVA statistical models, indicated that bone strontium levels were as high or higher in rats given strontium citrate, compared with rats given the prescription strontium; so OTC strontium supplements may have some of the same bone-building benefits. Does that mean it also has some of the same risks? We don't know; I could find no data showing that strontium salts are safer than strontium ranelate. High-dose strontium is known "to cause mineralization defects resembling rickets and to inhibit the synthesis of 1,25-dihydroxyvitamin D (the biologically active form of vitamin D)," says Gaby. These defects occur even when the rat diet includes recommended amounts of calcium.

As the European Medicines Agency continues to monitor the risk-benefit of strontium ranelate, consumers need to be aware that high-dose strontium salts may have risks of their own.

Blake GM, Lewiecki EM, Kendler DL, Fogelman I. A review of strontium ranelate and its effects on DXA scans. *J Clin Densitom*. 2007;10(2):113–119. Available at www.cof.org.cn. Accessed December 3. 2013.

Brooks M. Novel study confirms strontium ranelate's bone-forming benefits [online article]. Medscape. March 25, 2011. www.medscape.com/viewarticle/739683. Accessed November 20, 2013.

Gaby AR. Strontium for osteoporosis: how much and for how long? *Townsend Lett*. November 2009;28.

Medicines and Healthcare Products Regulatory Agency. Strontium ranelate (Protelos): risk of serious cardiac disorders – restricted indications, new contraindications, and warnings [Web page]. April 2013. www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON266148. Accessed November 15, 2013

Wohl GR, Chettle DR, Pejović-Milić A, et al. Accumulation of bone strontium measured by in vivo XRF in rats supplemented with strontium citrate and strontium ranelate [abstract]. *Bone*. January 2013;52(1):63–69. Available at www.ncbi.nlm.nih.gov/pubmed/22995463. Accessed November 15, 2013.

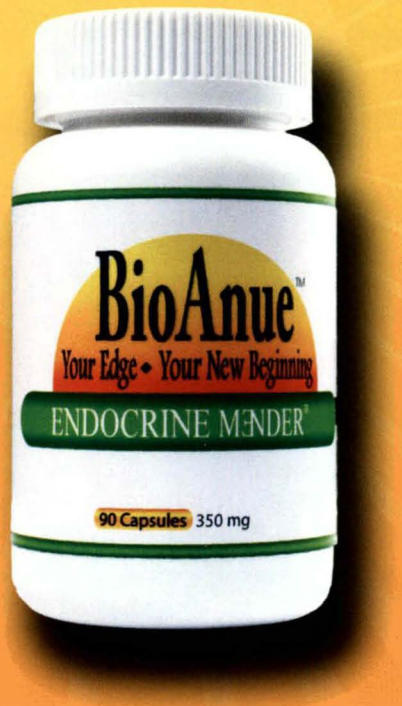
◆

ENDOCRINE MENDER®

Professional Grade Nutraceutical

Adrenal Fatigue... Stop Feeling Tired! Improve Your Life Today

See results in as little as one hour!



BioAnue Endocrine Mender nourishes key components of the endocrine system, affecting the body's ability to deal with stress and illness. It fortifies the immune system, increases stamina, and balances metabolic energy and hormones. Endocrine Mender contains substances proven to help repair and keep the endocrine system healthy and functioning properly.

Individuals from all areas of life, every culture, all ages, and every race can suffer from adrenal fatigue. Adrenal fatigue occurs when the activity of the adrenal glands diminishes. The less function that is going on in the adrenal glands, the more organs and systems in the body are affected. Changes occur in carbohydrate, protein, and fat metabolism, fluid and electrolyte balance, heart and cardiovascular system, and sex drive.

Directions: This product is dose dependant. Finding your activation dosage can be done by starting with one (1) capsule and then increasing by 1 capsule every hour until you feel a sense of well-being and/or increased energy.

If your emotional state has not calmed, mood hasn't lifted, or you do not feel better in general, then you do not need this product. Let it be noted that some people may require a higher dosage to feel the effects. Some people who have just experienced the loss of a loved one or gone though other stressful situations, have taken up to 17 capsules. So start with 1 and increase every hour until you hit your activation dosage. Once you find your dosage, take the total amount taken at once every morning.

To read more information and see research about this product please visit *www.tumorx.com*

Nutritional Facts
Serving Size: 1 Capsule
Whole Pituitary Substance*
Adrenal Substance*
Orchic Substance*
Parathyroid Substance*
* Daily value not established

*** This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

There are two sizes available:
90 capsules (350mg) $19.99
270 capsules (350mg) $56.94
First time customers will receive a free 10ct sample bottle with order.

This product is pure nutrition; no excipients, fillers, additives, or synthetic chemicals.

Private Label Available

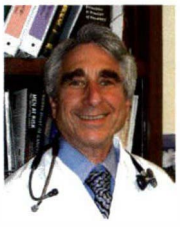
Please call (229) 365-7222 or visit our website at www.bioanuelabs.com

TO ORDER CALL OR FAX TO: PH 229-365-7222 FAX 229-365-7585
BIOANUE LABORATORIES INC. *123 WOOD TECH DRIVE * ROCHELLE GA, 31079

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

PEO Solution: The New Clinical Tool for Physicians

Prof. Brian S. Peskin, BSEE-MIT, Founder of Life-Systems **Engineering Science,** is the world's foremost **authority and international lecturer on physiologic plant-based oils** and the highly acclaimed author of the landmark book, The Hidden Story of Cancer. **Prof. Peskin is the "Physician's Resource for PEO-based Solutions."**



Robert Jay Rowen, M.D. is internationally respected as the "**Father of Medical Freedom.**" He is a **renowned international authority in oxidative medicine,** and **considered today's foremost pioneer of bold, innovative healing** methods. Having trained over 700 doctors and instrumental in helping thousands of patients recover their health, **Dr. Rowen is the "Doctor's Doctor."**

PEO Solution gives physicians the "missing link" to patients becoming lean-for-life, energized, and disease free. Discover what causes CVD and how to easily both stop and reverse it, and much, more. PEOs also have profound applications in sports medicine.

Worldwide Praise for PEO Solution:

"**Saying this is a 'must-read' for all health professionals is an understatement.**"
—Brian Vonk, M.D. —Board certified:
Internist, Cardiologist, and Radiologist (USA)

"**No medical professional can afford to miss reading this monumental work.** As far as I am concerned the **top three supplements everyone should be taking are PEOs, PEOs, and PEOs.**"
—Steve Helschien, D.C.: Level I Diagnostics (CVD Prevention), Level I Therapeutics (USA)

"**With this new discovery—all physicians regardless of their specialty**—will experience **significantly better patient benefits and outcomes.**"
—Paul Tai, DPM—Anti-Aging and Regenerative Medicine/Chairman of the Brazil American Academy of Aging & Regenerative Medicine—BARM (Brazil/USA)

"***...I have never seen such a remarkable result. When he [the patient] stopped the PEOs the plaque came back!***"
—Robert Kagan, M.D., Radiologist (USA)

Science is the Foundation...
PEO Solution

To purchase your copy of ***PEO Solution*** please call 1-800-456-9941 or online at www.PEO-Solution.com.
To order through the mail make check payable to: Pinnacle Press – The PEO Solution.
Send check to: Pinnacle Press, P.O. Box 56507, Houston, TX 77256
US orders: $27.50 plus $5.95 S&H. International Orders: +$13.50 S&H (US Funds / Money Order, please)

Probiotic support for a woman's special needs.

The presence of Lactobacillus and Bifidobacterium species is essential to a healthy genitourinary system for girls and women of all ages. Specific lactobacilli and bifidobacteria modulate mucosal immune response to pathogens, secrete biosurfactants to block pathogen adherence and disrupt biofilm formation, produce lactic acid to promote a healthy vaginal pH, generate antimicrobial bacteriocins, and promote proliferation of beneficial microflora.

Ther-Biotic® Women's Formula is a high-potency, hypoallergenic probiotic formula providing a variety of lactobacilli and bifidobacteria normally found in the vaginal microflora, important to maintaining vaginal and urinary tract health.

Ther-Biotic® Women's Formula

Multispecies probiotic to support genitourinary microflora balance

- Ten certified *Lactobacillus* and *Bifidobacterium* strains.
- Helps maintain a healthy vulvovaginal microbiota.
- Promotes a healthy acidic vaginal pH.
- Vegetarian capsules supply 25+ billion CFUs.
- InTactic® delivery system protects viability.

To Order, Call Toll Free
888-488-2488

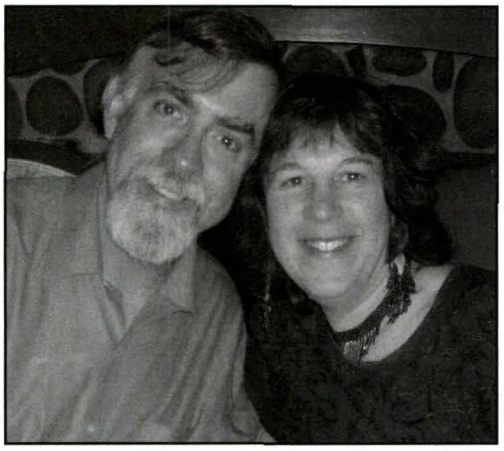
Available exclusively through licensed healthcare professionals.

Free, 2-day private labeling with 12 bottle minimum order.

KLAIRE LABS®
A division of ProThera®, Inc.

10439 DOUBLE R BLVD • RENO, NV 89521
Toll Free 888-488-2488 • 775-850-8800
www.klaire.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



Healing with Homeopathy

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

www.healthyhomeopathy.com

Homeopathy for the Backcountry: Hypothermia and Altitude Sickness

Some material excerpted from our upcoming book *The Savvy Traveler's Guide to Homeopathy and Natural Medicine*. Picnic Point Press; 2014.

Sheer Perseverance Under Adversity

We write this article from up-close-and-personal and very recent experience, having just concluded two weeks of backpacking and hiking in Chilean and Argentina Patagonia. They call it the end of the earth (*fin del mundo*), with good reason. The preponderance of North American, European, Asian, and other international travelers who find their way to places so remote is astounding. It is spectacular, jaw-dropping beauty, stunning views (when they reveal themselves) and hard-to-match trekking experiences that draw so many from so far. Patagonia, whose lovely name evokes an aura of the exotic, is a part of the world known far and wide for its unpredictable and quickly changing weather patterns. So, when we were basking in the 80 ºF sun at our home in the Chilean Lake District in Pucón, it was immensely helpful that Bob consulted a 14-day weather forecast for down south! Thank goodness for the Patagonia outdoor store in Pucón, which happened to carry the perfect airy yet toasty down jacket just Judyth's size (pricier than Amazon online, but we were in no position to complain) and a Doite camping store with an ample supply of extra tent stakes.

It is hard to imagine shivering when you are sweltering, but we did some last-minute repacking. A good idea. Brrrr! Think 50 mph winds and intermittent sprinkles, occasional clearing, and cold, driving rain. We ended up using every layer of our ultralight backpacking gear at one time or another, and even bailed out on two days of camping to dry out our gear in a comfy *refugio* that luckily had some spare beds after the hordes of Christmas Eve travelers trudged onward on the 25th. Imagine soaking wet hiking boots, socks, tent – everything! Our sincere thanks to the lovely, bright young Chinese woman Anabelle, clearly the fashion plate of the trail, who somehow convinced her male companions to haul the packs, which allowed her to remain fresh and pristine. Her secret of putting garbage bags inside the hiking boots and outside the socks made the final half-day bearable, though barely. Our low point was when Judyth was reduced to wrapping her Polar-Gard mittens around her feet while we huddled inside our tent. Judyth's homework regarding ultralight gear paid off, though we still carried way more than we needed – 30 to 35 pounds each. Next time less stuff! This was a trip to prove to ourselves that we were not yet over the hill – at 62 (Bob) and a month away from 66 (Judyth). The 20-somethings, who were definitely the majority, skipped (and even jogged) past us. Nevertheless, we forged through mud and slippery rocks, trekking 38 miles in Torres del Paine National Park in Chile with packs, and another 42 miles in Parque Nacional los Glaciares outside El Chaltén, Argentina. Are we counting? You bet! After mostly overcast skies, we were rewarded on our final day of hiking with the primo vistas of our journey yesterday at Laguna de los Tres (we still can't believe we made it 16 miles in one day). We were treated to the most breathtaking view we have *ever* seen in our years of hiking; and, for just one day, the sky was a brilliant, cloudless turquoise. Wow!

Our upcoming travel book, *The Savvy Traveler's Guide to Homeopathy and Natural Medicine: Tips to Stay Healthy Wherever You Go*, has been on the back burner since 1984 when we first met. It is packed with user-friendly, at-your-fingertips information so that your precious vacations need not be wrecked by health mishaps and illness. This

➤

➤

column addresses hypothermia and altitude sickness, two of the most common – and potentially fatal – conditions encountered by hikers, climbers, backpackers, skiers, and other sports enthusiasts who like us are enthralled by the backcountry.

Hypothermia

By definition, hypothermia is when your rectal temperature falls below 95 ºF (35 ºC). It is not necessary to be in a weather of extremely low temperature in order to become hypothermic. In fact, any temperature less than your body temperature (98.6 ºF) could potentially be compatible with hypothermia. Wind, wet, and cold are all key players. Judyth, who feels constrained in long pants while hiking, stripped down to zip-off shorts. Not very smart in chilling, driving rain; and during the last couple of hours, she was observing herself carefully for warning signs of hypothermia. Fortunately, they did not arise.

Risk factors:

- low temperatures
- being thin with less body fat
- fatigue, exhaustion
- dehydration
- being wet
- inadequate food intake
- inadequate clothing or equipment
- wind
- alcohol
- very young age
- older age

Symptoms: Rick Curtis of the Princeton Outdoor Programs discusses the four "umbles" that indicate changes in motor coordination and levels of consciousness: stumbles, mumbles, fumbles, and grumbles.[1] Mild hypothermia: shivering, inability to perform complex motor functions such as skiing, and vasoconstriction to the periphery. Moderate: dazed, slurred speech, violent shivering, irrational behavior, apathy. Severe: shivering in periodic waves, falling to the ground due to inability to walk, curling up in a fetal position, muscle rigidity, pale skin, dilated pupils, slow pulse, deathlike appearance.

Homeopathy

- *Arsenicum album* (arsenic): Extreme chilliness. Very anxious, restless, fear of death and of being alone. Desire to sip water constantly. These hikers want company, warmth, and reassurance. They are worriers and not typically the most likely folks to be out hiking in bad weather if they can help it.
- *Camphora* (camphor): Great coldness. Blue with cold. Feeling of coldness in extremities and all body parts, even tongue. This is not a medicine that you are likely to have with you, but one to consider adding to your kit if you plan a trip to Antarctica, the Yukon, or the North Pole.
- *Carbo vegetabilis* (charcoal): Icy coldness of the whole body, especially nose, hands, feet, knees. Cold skin, cold breath. Pale. Lips and skin bluish. Exhaustion. Wants to be fanned. This is the first medicine to think of in case of severe hypothermia, especially if the person is icy cold, lifeless, and near death.
- *Secale* (ergot of rye): Icy cold. Shivering. Blueness of gangrenous parts.

Prevention

- Carrying adequate layers of warm, dry, waterproof, and windproof clothing and sleepwear cannot be emphasized enough. This necessitates keeping the gear perfectly dry: garbage bags, pack covers, dry bags – whatever works. We found our pack rain covers to be fairly useless in wet, high wind conditions and will be replacing them. Judyth's decades-old leather boots needed seam repair and, given the unrelenting rain, ubiquitous muddy puddles, and one mishap crossing a stream, are past their prime, or at least in serious need of a heavy application of Sno-Seal.
- Check in with yourself and your trekking buddies frequently about how you are feeling if you are in a situation where hypothermia is possible.
- Add layers of dry clothing as soon as you begin to feel cold, not when you are shivering with teeth chattering.
- Move around.
- Find protected shelter.
- Go near a fire or other external heat source. (This was forbidden in Patagonia.)
- Eat carbs for quick energy (along with proteins and fats).
- Push fluids, especially hot liquids such as warm sugar water.
- Avoid alcohol, caffeine, and smoking
- Do urinate so that the body doesn't need to warm the urine in the bladder.
- Utilize body-to-body contact, such as getting in a sleeping bag with dry clothing next to a person of normal body temperature who is lightly dressed.
- Wrap in multiple sleeping bags, wool blankets and clothing, Therm-a-Rest or Ensolite ground pads, and space blankets covered in plastic. We swear by our NeoAir state-of-the-art Therm-a-Rests – super light and great padding.

More Natural Tips

- Cayenne foot or hand warmers or cayenne capsules can keep you warm, at least temporarily.

Lifesavers

- Spot Satellite or other GPS: A couple of years, ago a European couple nearly died on the mountain near our home in Pucón when a bitterly cold, unexpected windstorm blew in. How did they survive? By having a Spot Satellite emergency device and pushing the panic button, which called the company's Texas headquarters, the couple was rescued and their lives were spared.[2]
- When hiking, boating, or engaging in other outdoor sports, be prepared for weather changes and take layers just in case. You never know what the sky and wind will bring! Some good friends on our island went out sailing on a catamaran one beautiful day. Though they were quite experienced, the wind came up, preventing them from navigating properly, and the sun went down. They were dressed in shorts and T-shirts. Had someone not seen them and called the Coast Guard, they would not have survived.
- If the weather takes a sudden, drastic change for the worse, stay put and wait it out, rather than putting yourself at risk. Judyth: One sunny morning, my ex-husband, a seasoned hiker, set off on a day hike. Heavy fog set in, he stepped off a cliff, broke his neck, and tragically died. You never know what weather in the mountains may bring!

Trip Savers

- Make a pact with your travel buddies to keep checking with each other as to coldness status. Once you fall into a hypothermic state, you can no longer think clearly, so prevention is literally a matter of life and death.

Altitude Sickness (Acute Mountain Sickness, or AMS)

The name of the game is "acclimatize." Arriving a couple of days early to your high-altitude destination can make all the difference in the world between a great experience and a miserable one. It takes about three weeks to fully acclimatize. When planning our pilgrimage to Machu Picchu and the Sacred Valley seven years ago, our first consideration was altitude. Aware that Cuzco was 12,000 feet high and Machu Picchu considerably lower, we gave ourselves several days to get used to the thin air. Bob became quite winded ascending the countless stairs to our hotel room in Cuzco, but we were unaffected by the time we hit the ruins, which was our goal.

The higher you go, the thinner the air, the less available oxygen, and the more terrible you are likely to feel. The risk of AMS generally begins a little over an altitude of 8000 feet (2500 meters). Anyone, of any age and health status, may suffer. Hiking above 3500 feet (1100 meters) affects about half of all trekkers, 5% seriously, especially if you remain at that altitude for more than six hours. Mild symptoms include headache, shortness of breath, loss of appetite, nausea and vomiting, fatigue, irritability, and difficulty sleeping. If symptoms are severe, you may experience breathlessness, even at rest; coughing up pink, frothy sputum; severe headache; double vision; sleepiness; and unsteadiness. Severe AMS can be *life-threatening* and requires *immediate* emergency medical attention.

Homeopathy

Homeopathy is extremely effective in preventing and treating altitude sickness. We recently traveled to the Atacama Desert in the Chilean Andes and were able to walk around comfortably, though briefly (with down jackets and mufflers), at 5350 meters (17,552 feet), fully enjoying the view of 11 volcanoes! One of our patients used it very successfully during her ascent of Mount Rainier in Washington State.

- *Arsenicum album* (arsenic): If you don't have *Coca*. Anxiety, restlessness, heart palpitations, chilliness, weakness from slight exertion, and fear of death.
- *Coca* (*Erythroxylon coca*): "The mountaineer's medicine." Specific for altitude sickness. Symptoms are difficulty breathing, heart palpitations, anxiety, and

➤

➤

insomnia. It is not available in the US, but you can find it in India or South America, or possibly through some international homeopathic pharmacies. You can take it on the plane when flying to a very high destination, as well as the morning that you start to climb. If available, use either a 30C, 200C, or 1M potency.

Prevention

- Be in the best possible physical condition before trekking.
- Allow a couple of days to acclimatize and rest after arriving at a high altitude.
- Ascend slowly and gradually. Spend two to three nights at each elevation gain of 3000 feet (about 1000 meters) while trekking.
- Climb high and sleep low. Sleep at lower altitudes than you climb each day.
- Do not climb solo.
- Drink lots of fluids to prevent dehydration, and avoid alcohol.
- If you develop symptoms, wait until they subside before ascending any further.

More Natural Tips

- Coca tea (*mate de* coca) is widely available around Machu Picchu and other high areas in South America, and helps acclimatization. You will notice the indigenous people with mumps-like swellings because they are chewing wads of coca leaves.

Lifesavers

- Descend immediately if your symptoms are severe, persist, or worsen.
- Do *not* be too macho or embarrassed to admit that you are having symptoms of AMS or hesitate to tell your trekking companions.
- Do not hesitate to use oxygen if you are having trouble breathing.
- Do *not* drive a vehicle if you are dizzy, drowsy, disoriented, or ill.

Trip Savers

- If you follow the guidelines of safe ascent, medication should not be necessary. Acetazolamide (Diamox) is a conventional medication that can be used to prevent or treat mild AMS, but it won't help with severe AMS, and it does have side effects.

Take What You Will Need on the Trail

Better safe than sorry! Take an adequate first aid kit for your journey and, definitely, a homeopathic kit (ours, which is a companion to our travel book, is one option). We *always* end up using it, and it weighs 1 pound maximum. During this recent saga, *Arnica* was a godsend for sore muscles; *Hypericum* for Bob's jammed toes descending trails for miles and days; *Rhus toxicodendron* for sore, stiff joints; and *Bryonia* for Bob's severe, short-lived, last-day back pain, which was worse from any movement (a giveaway for *Bryonia*). All of these medicines worked within 30 minutes. Remember: the priorities are warm clothing and shelter, water, and food. Next come your first-aid and homeopathic traveling pharmacies. We also take a bit of *Calendula* cream for abrasions and, at least at our ages, a knee brace, just in case. (which remained, thankfully, tucked in the pack). And, of course, hiking poles are invaluable for descending steep trails, crossing streams, and traversing slippery surfaces safely. With all of the lightweight gear and freeze-dried or home-dehydrated food options, do *not* skimp on your first-aid supplies! At the least, it can make the difference between comfort and misery (as with the young woman on the Torres del Paine trail who had oozing, raw foot blisters that could have been handled easily with 2nd Skin, which weighs next to nothing) and, in drastic conditions, between life and death. Have a wonderful time hiking on the countless magnificent trails and parks on this phenomenal planet. And keep safe and healthy as you go... naturally!

Judyth Reichenberg-Ullman and Robert Ullman are licensed naturopathic physicians, board certified in homeopathy. Much of the material for this article was excerpted from their upcoming book *The Savvy Traveler's Guide to Homeopathy and Natural Medicine: Tips to Stay Healthy Wherever You Go!* Their previous books include *Homeopathic Self-Care, The Homeopathic Treatment of Depression, Anxiety and Bipolar Disorder, Whole Woman Homeopathy, Ritalin-Free Kids, Rage-Free Kids, A Drug-Free Approach to Asperger Syndrome and Autism, The Patient's Guide to Homeopathic Medicine*, and *Mystics, Masters, Saints and Sages: Stories of Enlightenment*. New editions of *Ritalin-Free, Whole Woman Homeopathy, and Homeopathic Self-Care* should be available this month, as well as electronic and free mini-versions of all of the books. The doctors live on Whidbey Island, Washington, and in Pucón, Chile, and practice at the Northwest Center for Homeopathic Medicine in Edmonds, Washington. They treat patients by phone and videoconference as well as in person. They can be reached at 425-774-5599, drreichenberg@gmail.com, or drbobullman@gmail.com. Their website is www.healthyhomeopathy.com.

Notes

1. Curtis R. Outdoor Action guide to hypothermia and cold weather injuries [online article]. Outdoor Action. www.princeton.edu/~oa/safety/hypocold.shtml.
2. SPOT [Web page]. www.findmespot.com.

◆

Scandinavian Formulas

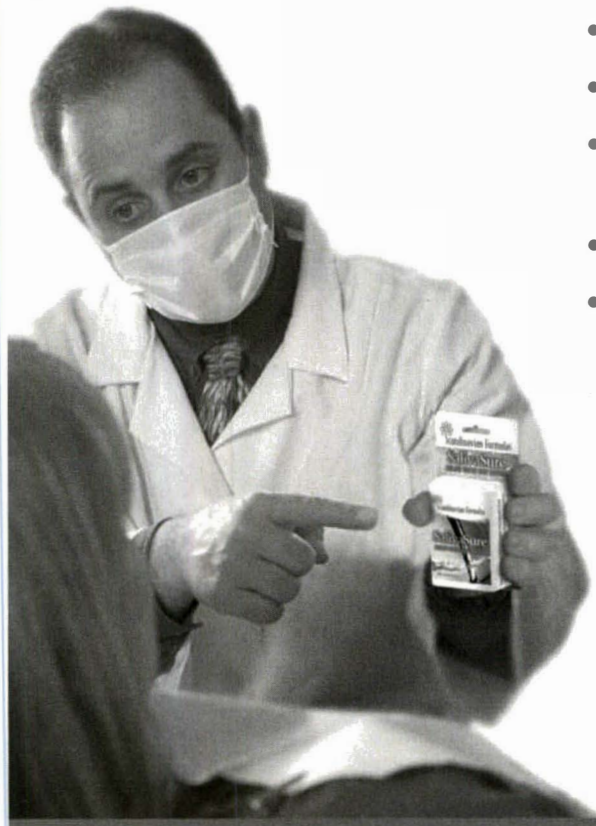
SalivaSure™

Fast Relief From Dry Mouth

A lozenge that is safe, effective and convenient

New, improved formula with xylitol

- *Naturally increases saliva production*
- *Fresh citrus taste*
- *Prevents tooth decay*
- *No interaction with medications*
- *Safe for diabetics*
- *Available in convenient flip-top container*



Ingredients: Xylitol, Citric Acid, Apple Acid, Sodium Citrate Dihydrate, Sodium Carboxy Methyl Cellulose, Dibasic Calcium Phosphate, Silica Colloidal, Magnesium Stearate, Stearic Acid.

These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.

Another Fine Product from Scandinavian Formulas

For More Information, Call 1-800-688-2276 • www.scandinavianformulas.com

Optimizing Metabolism

by Ingrid Kohlstadt MD, MPH
www.INGRIDients.com

Change for Women's Health

Introduction

As health-care providers, we can help our patients the most when we empower them to carry the message home. With nutrition, the "take-home" is especially important because change in one family member's diet is most successful when the entire family changes.

Bringing dietary change home to the whole family is a job for a well-equipped change agent. This column therefore equips doctors and their patients for change – the penny, nickel, and quarter kind. It explains five dietary changes proven to benefit American women and family members, too. Now each "My doctor said..." is also *backed* by US currency.

Use Nori to Measure Your Sea Minerals!

National population studies indicate that women have low levels of minerals, often lower than in previous generations. While minerals can be measured at the population level, they tend to not be meaningful at the individual or patient care level. Minerals in high concentrations such as calcium and iron are sequestered, making blood levels variable depending on the body's signals. Other trace minerals such as chromium and iodine are hard to measure because of the minute concentrations.

While a lab can't measure trace mineral deficiencies, the body can. For example, recipes instruct us with phrases such as "Season to taste," or "Add salt to taste." Tastes vary because nutrient needs vary. Most of us have experienced this without realizing it. For example, a dehydrated, mineral-depleted athlete is likely to find Pedialyte neutral-tasting or even deliciously refreshing. When recovered, the same person might grimace at the taste of oral rehydration salts.

We can apply our sense of taste to measure our sea mineral supply. Here's how I recommend conducting the taste test. Purchase sheets of sesame-toasted nori. It's becoming widely available in grocery stores, with many different brands. I generally purchase Korean-style nori such as Sea's Gift brand. Upon opening the package, eat a sheet of seaweed by itself or with rice. Invite your family to participate in the taste test as well.

Interpret your results. If nori tastes delicious, your body probably needs the iodine and selenium. Have a few toasted nori sheets each day, and notice if you like them less. If so, congratulate yourself. You've built up your body's store of sea minerals. If nori is not to your liking, you may have enough. Try the taste test again after you've experienced stress or physical exertion. You just might like it.

"Salt to taste" is well established. It's the reason that tourists to Glacier National Park enjoy the view featured on the 2011 quarter. Mountain goats descend to Logan Pass for a lick of salt. When their taste is satisfied, they return to Mount Reynolds's peak.

Cook with Saturated Plant Fats in Summer!

Our national public health messages have bundled saturated fats together. But saturated fats are not created equal. Saturated plant fats have unique health properties, in part due to their shorter length than saturated animal fats. But if you go to a health food store in North America's northern reaches, you might conclude that the pendulum of dietary fads has swung in the opposite direction. You would probably have many tropical nut oils from which to choose. So should coconut oil be your choice?

Use unrefined coconut oil when it is a liquid. The kitchen jar of coconut oil can serve as a thermometer, because when the ambient temperature drops below 70 °F, coconut oil becomes a solid butter. As outside temperatures cool and coconut oil becomes solid, cook with monounsaturated oils such as olive, sesame, and hazelnut instead, as this is when the body utilizes more unsaturated fats.

This advice has been coined, so to speak. Coconut palms appear on the quarters of American Samoa, Northern Mariana Islands, and Florida – all tropical climates. Tropical nuts tend to be highly saturated in contrast to cold-water fish, which are highly unsaturated. As part of nature we, too, can adapt to our surroundings by including more saturated plant fats in hot weather and unsaturated fats in winter.

Don't Overlook Whole-Grain Rice As a Fiber Source!

Gluten sensitivity has become so common, especially among women, that many of us are shopping for the gluten-free label. There is indeed a health basis for avoiding gluten. However, when choosing gluten-free, many shoppers often pay more for less. Common flours used in place of wheat such as rice, potato, and tapioca tend to have less fiber and more sugar.

Instead of shopping for the foods that are just like the wheat products except with a different grain, diversify. My favorites are oatmeal prepared as Swiss muesli, hummus with vegetables for dipping, and a blend of wild and brown rice. I prepare wild rice by mixing it with organic brown rice and add organic beef stock, sesame oil, and a few drops of orange oil to the rice cooker.

Studies show that people will eat more of a food if they think of it as local or belonging to their society. We tend to think of rice as an Asian import and therefore overlook that it is a crop grown in the US. While technically botanists classify the wild rice growing in lakes and estuaries as a different plant than the rice originating in Asia, its use as a food and its nutrient value are comparable. Rice is *ingrained* on the Arkansas quarter, buttressing the correct claim that it is indeed an American whole grain.

Wild Salmon Is Worth the Spend!

Numerous scientific studies have diluted the benefits of wild salmon by studying only one nutrient, usually the omega-3 fats. This is only one of several benefits. Salmon is a whole food containing a variety of healthful fats, including neurolipids. It is also a source of lean protein and many minerals. Farm-raised salmon is generally of lesser nutritional value and possibly a greater source of toxicant exposure, but remains a healthful choice.

Several US coins feature salmon or other fish caught wild. For example, Washington State's quarter features the salmon jumping from a lake. My favorite depiction of fish on US coinage is Alaska's grizzly with a salmon in its mouth. The Alaskan grizzly aptly illustrates the benefits of salmon for women's health. Grizzly bears living inland such as Denali National Park do not have access to salmon. Consequently they are smaller and average fewer offspring than the coastal grizzly bears who partake in the annual feast. In other words, even though salmon is pricey, consider it a *bear* necessity.

Buy What's Best Rooted!

Today it is possible to stand at a grocery store and choose among local, organic, heirloom, local heirloom, organic heirloom, or locally grown organic, all within an arm's reach. So which is the most healthful? The answer changes based on the crop, where "local" is located, and if the person's immune system is sensitized to the food. To make wise on-the-spot decisions, it helps to go to the root of the matter. I choose my produce based on the soil in which it was rooted and how long it grew there.

Organic used to imply that the plant was grown in nutrient-rich soil, because chemicals didn't diminish the soil quality. Today organic crops are often raised in nutrient-barren desert land or no soil at all. They may be picked prematurely or packaged in gas to ripen and preserve. Organic is less reliable a marker of good roots, and local produce with a bit more chemical residue may net a higher nutrient value. Heirloom produce benefits those with allergies or food intolerances because the immune system is evolved for variety.

Choices at the grocer may have changed, but nothing is new about the importance of soil. "Never treat soil like dirt!" Famous winemakers have made this their watchword. One of the best testaments to soil's importance to health, especially reproductive health, is minted on Kentucky's quarter. Thoroughbred race horses (not to be confused with *quarter* horses) have, as the name suggests, carefully selected genetics. But genetics are not the complete story. If they were, it wouldn't matter where the horses are raised. Kentucky's fame is rooted in its grasslands, which have measurably superior soil nutrient levels and microbial concentrations.

In Summary

Change always meets resistance. Sometimes changes at home are the hardest for our patients to make. Now we can advise our patients to, "Be the messenger of *change* and let someone else *coin* it."

Images are provided from the US Mint (usmint.gov).

Ingrid Kohlstadt, MD, MPH, FACN, FACPM, is the founder of INGRIDients Inc., where she has edited *Advancing Medicine with Food and Nutrients*, 2nd edition (CRC Press; 2012). On the faculty of Johns Hopkins Bloomberg School of Public Health, Dr. Kohlstadt is researching an approach to leverage nutrition more fully in disease prevention.

◆

Pathways to Healing

by Elaine Zablocki

Spectrum Clinic Communicates with 'Superutilizers'

R. Corey Waller, MD, MS, and the staff at the Spectrum Health Medical Group Center for Integrative Medicine (CIM), in Grand Rapids, Michigan, are exploring new ways to serve people who come back to the emergency room again and again.

When *Townsend Letter* readers think of integrative medicine, generally we think about a model that combines conventional allopathic medicine with complementary forms of care such as acupuncture and herbal medicines. "Integrative medicine in this setting specifically alludes to the way we're integrating behavioral health into physical health," says Waller. "In addition, when we find certain aspects of complementary medicine help our patients, we're quite liberal in utilizing them. I'm a neuroscientist by training, and I have an analytical approach. When I look at the science behind mindfulness techniques, I find that it is very solid. In fact, these methods are particularly valuable for the patients we treat."

Every large city has people who rely on the emergency room whenever they have a health problem. This is a very expensive form of care, and it's not an effective way to treat long-term problems. "I'd like to say I started this process of treating superutilizers out of good will and empathy," Waller says. "Actually, it was frustration. Right out of residency I started working in the emergency department, and I saw the same patients over and over."

When Waller reviewed data from previous years, he found that during one year, about 950 patients visited the emergency room more than 10 times. They had hard-to-diagnose conditions such as psychiatric illness, chronic pain, and/or addiction. Altogether, 950 people were responsible for more than 20,000 visits and about $50 million in costs.

"As I looked more closely at these patients, I found one reason I had so little impact was that I hadn't been trained in the appropriate areas," Waller says. "I was frustrated because we actually do have the knowledge to treat these patients better, but nobody had taught me."

Addiction: How Does it Work?

Waller sought additional training, and today he is board certified in addiction medicine and board eligible in pain medicine. The best way to think about addiction, he says, is to consider it a chronic neurobiological degenerative disorder. "Most people who develop the disease of addiction have a genetic predisposition for it. Studies currently place genetic predisposition with about 60% of the risk," he says. "The other 40% of the risk relates to factors such as early life trauma and the surrounding social environment."

Consider this: When a group of 10 people sit around drinking beer, 9 of them get a bit buzzed and have a headache the next day; it's not a big deal. "But one of those people has a completely different experience," Waller says. "They describe it as eye-opening, the first time they felt normal. When you ask someone with the disease of addiction to describe the first time they used, they talk in mind-jarring detail because it was such a profound experience for them."

People who have a genetic predisposition to addiction start out with normal dopamine levels, but they have an exceptionally strong reaction to an increase in dopamine levels. Then, as they ingest addictive substances over time, they become much less sensitive to normal levels of dopamine. They have physical changes in the brain, and now they process dopamine differently.

"Someone in this situation experiences anhedonic depression, a very flat depression, basically no emotional feelings," Waller says. "So the body seeks dopamine in order to feel normal. If you ask people who drink or use opioids or smoke marijuana, a lot of them will say they do it so that they feel normal. Basically, it's because they have to replace dopamine."

The Center for Integrative Medicine: What it Does

The Center for Integrative Medicine opened in December 2011. It is a multispecialty clinic that uses on an integrative team approach to assess and treat people with more than 10 emergency department visits per year. Its goal is to resolve some of their underlying issues, so that they can eventually manage their lives more effectively, and receive continuing medical care through a community-based primary care provider.

A patient's experience at the center starts with a four-hour intake interview that looks at every medical, mental health, and social problem the patient has had and does a "birth until now" history for each problem. This means looking at each issue in great detail. Were there predisposing factors during pregnancy? What was the family situation? "Then you say, 'When was the first time you had issue A; describe that to me,'" Waller says. "'If you hurt your ankle, did it take you exceptionally long to heal?' We try to take a complete history so we can pinpoint when things went awry. We find that a large proportion of our population has a significant early sexual or physical trauma."

Services at the center include:

- comprehensive exam by a specialty-trained physician
- behavioral health evaluation and counseling by a mental health professional
- comprehensive addiction assessment and treatment
- master's-level social work case management evaluation and intervention

During the next 3 to 6 months, patients work with a behavioral health specialist to make appropriate changes in their lives. There's a strong emphasis on cognitive behavioral therapy, and on looking at all issues from a positive viewpoint (motivational enhancement therapy). One of the basic principles that makes the center work is honesty. "We believe in being very truthful and direct about what is going on with them," Waller says. "Don't beat around the bush. Of course, you do this kindly, but you also have to say, 'It's a fact that you have this disease of addiction. If you want to deal with it, here are the next steps.'"

What does success look like? Waller describes one 48-year-old woman who was on 35 different medications when she first came in. She has diabetes, chronic migraine, high blood pressure, and a recurrent gastrointestinal disorder. Twenty years ago, her two children died in the same year (one in a car accident, one due to a health problem). Since then she has experienced extreme anxiety; she was treated with conventional therapies, but they were not effective. She was not able to cope with the usual problems of daily life, and she would go to the emergency room when any problem arose.

Now, after focused cognitive behavioral therapy, she is dealing with life in a different way. She is doing volunteer work, and considering ways of finding paid work. She takes only two medications, one for diabetes, one for anxiety. "Recently her father was diagnosed with pancreatic cancer," Waller says. "Instead of completely melting down, she is now putting together all the ways she can help him throughout this process."

Cities Explore New Ways to Serve High Utilizers

The pattern Waller found in Grand Rapids, where a small group of superutilizers is responsible for a large share of repeated emergency room visits, recurs in most American cities. In 2011 the *New Yorker* published an article by Atul Gawande called "The Hot Spotters," describing innovative work on this issue in places such as Atlantic City and Camden, New Jersey. The complete article is available online (see Resources, below), and it is well worth reading.

R. Corey Waller, MD, MS

Last July, the Center for Medicaid and CHIP Services (CMCS) published a 39-page informational bulletin called "Targeting Medicaid Super-Utilizers to Decrease Costs and Improve Quality." It looks at a spectrum of possible approaches, based on interviews with 10 superutilizer programs across the country.

What is at the core of all these programs? "We need a baseline understanding of how behavioral health and physical health meet and overlap," Waller says. "We find ourselves looking at what seem to be untreatable physical conditions because nobody is talking about or working on the underlying behavioral health issues." He hopes and expects that the methods currently being developed at the Center for Integrative Medicine will eventually serve as care models for health-care centers in other cities.

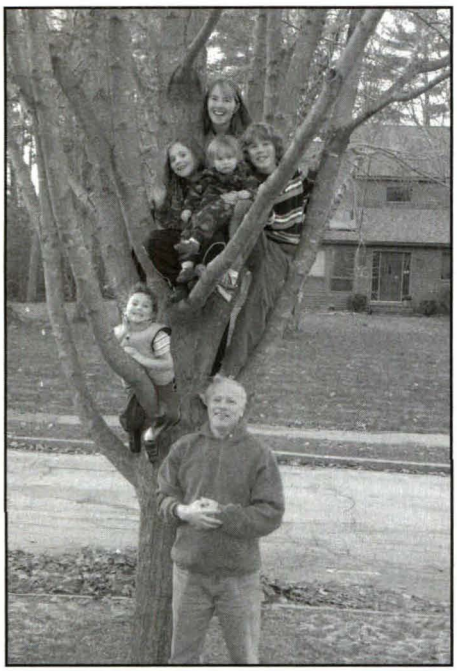
Resources

CMCS Informational Bulletin: http://www.naph.org/Links/POL/CHIP-superutilizers-informational-bulletin-July-2013.aspx.

Gawande A. The hot spotters. *New Yorker*. Jan. 4, 2011. Available at http://www.newyorker.com/reporting/2011/01/24/110124fa_fact_gawande.

Spectrum Center for Integrative Medicine: http://www.shmg.org/cim.

Elaine Zablocki has been a freelance health-care journalist for more than 20 years. She was the editor of *Alternative Medicine Business News* and *CHRF News Files*. She writes regularly for many health-care publications. ◆



Literature Review & Commentary

by Alan R. Gaby, MD
drgaby@earthlink.net

Menaquinone-7 (Vitamin K2) for Osteoporosis Prevention

Two hundred forty-four healthy postmenopausal women (aged 55–65 years) were randomly assigned to receive, in double-blind fashion, 180 μg per day of vitamin K2 (menaquinone-7; MK-7) or placebo for 3 years. Compared with placebo, MK-7 significantly decreased the decline in bone mineral density and bone mineral content at the lumbar spine and femoral neck, but not at the total hip. MK-7 also significantly decreased the loss in vertebral height of the lower thoracic region at the mid-site of the vertebrae.

Comment: *Vitamin K* is the general term for a group of structurally related compounds that have antihemorrhagic activity. Vitamin K1 (also called phylloquinone or phytonadione) is the major form of vitamin K found in plants. Vitamin K2 is a group of compounds collectively referred to as menaquinones, which are classified according to the number of isoprenyl units on the side chain. Thus, vitamin K2 with 4 isoprenyl units is called menaquinone-4 (MK-4; also known as menatetrenone), and vitamin K2 with 7 units is called menaquinone-7 (MK-7). Menaquinones of various chain lengths are present in some foods, such as cheese, egg yolks, and natto (fermented soybeans).

Vitamin K is essential for the synthesis of osteocalcin, which is a component of the protein matrix in bone and which appears to play a role in bone mineralization. Studies using vitamin K1 for osteoporosis prevention have produced conflicting results. Vitamin K2 in the form of MK-4 has been shown to prevent bone loss and to reduce fracture incidence in postmenopausal Japanese women. However, MK-4 has not been effective in studies done outside Japan. The amount of MK-4 used in most clinical trials was 45 mg per day, which is hundreds of times higher than the amount of vitamin K present in a typical diet. In contrast, a dosage of 1.5 mg per day of MK-4 was not more effective than a placebo for preventing bone loss. There is evidence that the beneficial effect of MK-4 on bone health may be due more to its side chain than to its vitamin K activity, which might explain why pharmacological doses appear to be necessary to achieve the observed effect.

MK-7, the form of vitamin K2 present in natto, has been found to have greater biological activity and a longer half-life than MK-4. In addition, daily administration of MK-7 resulted in a plasma vitamin K concentration 5 times higher than that achieved by daily administration of an equimolar amount of vitamin K1. Thus, MK-7 appears to be a more potent form of vitamin K than the other commercially available forms of the vitamin.

The present study is the first clinical trial to examine the effect of MK-7 on bone health in humans. The fact that physiological doses of this vitamin were able to reduce bone loss and prevent loss of vertebral height is noteworthy.

Knapen MH et al. Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women. *Osteoporos Int.* 2013;24:2499–2507.

Topical Silymarin Cream for Melasma

Ninety-six patients (aged 28–55 years) with melasma (disease duration, 2–6 years) were randomly assigned to apply, in double-blind fashion, silymarin cream (7 mg or 14 mg of silymarin per ml) or placebo cream to the affected areas twice a day for 4 weeks. Eighty-three percent of the patients were female; pregnant and nursing women were excluded. The patients were advised to avoid sun exposure and to use topical sunscreen. Significant improvement in the Melasma Area and Severity Index score was seen after 1 week in both active-treatment groups. The lesions cleared completely in all patients after 4 weeks of treatment with low-dose silymarin and after 3 weeks of treatment with

high-dose silymarin. No significant changes were seen in the placebo group. No side effects were observed.

Comment: Melasma is a brown hyperpigmentation that occurs on the face and other sun-exposed areas. Silymarin was investigated as a potential treatment for melasma, because it has been shown to prevent melanin production. Other treatments that have been shown to be effective for melasma include topical vitamin C, topical niacinamide, and topical azelaic acid.

Altaei T. The treatment of melasma by silymarin cream. *BMC Dermatol.* 2012;12:18.

Magnesium for Cardiac Arrhythmias

Sixty symptomatic patients (mean age, 48 years; range, 16–70 years) with more than 240 premature ventricular complexes (PVCs) or premature supraventricular complexes (PsVCs) on 24-hour Holter monitoring were randomly assigned to receive, in double-blind fashion, 3 g per day of magnesium pidolate (260 mg per day of elemental magnesium) or placebo for 30 days. None of the patients had structural heart disease or renal failure. The proportion of patients who had more than a 70% decrease in the number of premature complexes (as determined by a repeat Holter monitor at the end of the treatment period) was significantly higher in the magnesium group than in the placebo group (77% vs. 0%; $p < 0.001$). Both PVCs and PsVCs improved with magnesium supplementation. The proportion of patients who reported symptomatic improvement was also significantly higher in the magnesium group than in the placebo group (93% vs. 17%; $p < 0.001$).

Comment: Magnesium deficiency can lead to various arrhythmias, including ventricular premature beats, atrial fibrillation, supraventricular tachycardia, torsades de pointes, supraventricular ectopic beats, bigeminal rhythm, and ventricular fibrillation. In addition, intravenous magnesium has been used successfully to treat various arrhythmias in patients who did not necessarily have magnesium deficiency. The results of the present study demonstrate that oral magnesium supplementation decreased the frequency of premature ventricular complexes and premature supraventricular complexes, and improved the associated symptoms.

Falco CN et al. Successful improvement of frequency and symptoms of premature complexes after oral magnesium administration. *Arq Bras Cardiol.* 2012;98:480–487.

Melatonin for Beta-Blocker Induced Insomnia

Sixteen hypertensive patients (aged 45–64 years) being treated with a beta blocker (atenolol or metoprolol) were randomly assigned to receive, in double-blind fashion, 2.5 mg of melatonin or placebo each night for 3 weeks. Compared with placebo, melatonin increased total sleep time by 36 minutes ($p < 0.05$), increased sleep efficiency by 7.6% ($p < 0.05$), and decreased sleep onset latency to stage 2 by 14 minutes ($p = 0.001$), as assessed by polysomnography. Sleep onset latency remained significantly shortened on the night after discontinuation of melatonin, suggesting a carryover effect.

Comment: Beta blockers suppress nighttime melatonin secretion, which might explain why these drugs sometimes cause insomnia. The results of this pilot study suggest that melatonin may be beneficial in the treatment of sleep disturbances associated with beta blocker therapy. Unlike with some medications used to treat insomnia, discontinuation of melatonin did not result in rebound insomnia.

Scheer FA et al. Repeated melatonin supplementation improves sleep in hypertensive patients treated with beta-blockers: a randomized controlled trial. *Sleep.* 2012;35:1395–1402.

B Vitamins for Diabetic Neuropathy

Two hundred fourteen patients (mean age, 63 years) with type 2 diabetes and neuropathy were randomly assigned to receive, in double-blind fashion, a daily supplement containing 3 mg of L-methylfolate calcium, 2 mg of methylcobalamin, and 35 mg of pyridoxal-5′-phosphate (PLP; Metanx; Pamlab LLC, Covington, LA) or placebo for 24 weeks. Compared with placebo, the B vitamins had no significant effect on vibration perception threshold (the primary end point). However, patients receiving the B vitamins consistently reported symptomatic relief (a secondary endpoint), with clinically significant improvement in the mean Neuropathy Total Symptom Score (NTSS) at week 16 ($p = 0.013$ vs. placebo) and week 24 ($p = 0.033$ vs. placebo). At 24 weeks, compared with the change in the placebo group, the mean improvement in the active-treatment group on the NTSS was 0.43 on a 6-point scale. The treatment was well tolerated.

Comment: In this study, treatment with biologically active forms of vitamin B6, vitamin B12, and folate produced modest improvement of neurological symptoms in patients with neuropathy associated with type 2 diabetes.

➤

➤

In previous research, oral administration of pyridoxine or intramuscular administration of vitamin B12 (in the form of cyanocobalamin or hydroxocobalamin) provided symptomatic relief in patients with diabetic neuropathy. Therefore, it is not clear whether it is necessary to use the more expensive activated forms of B vitamins in order to achieve a therapeutic effect.

Fonseca VA et al. Metanx in type 2 diabetes with peripheral neuropathy: a randomized trial. *Am J Med.* 2013;126:141–149.

Vitamin D for Amyotrophic Lateral Sclerosis?

The mean serum 25-hydroxyvitamin D concentration in 37 patients with amyotrophic lateral sclerosis (ALS; median age, 55 years; median time since symptom onset, 61 months) was 22.3 ng/ml. Eighty percent of the patients had a 25-hydroxyvitamin D level less than 30 ng/ml and 43% had a level less than 20 ng/ml. Twenty patients with a 25-hydroxyvitamin D level less than 30 ng/ml received 2,000 IU per day of vitamin D for 9 months. The mean rate of functional decline, as determined by the Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS-R) score, was significantly less in the patients who received vitamin D than in the 17 patients who did not receive vitamin D ($p < 0.01$). Among the 14 patients in whom ALSFRS-R scores were determined before and after vitamin D supplementation, the mean rate of decline was significantly less after starting vitamin D than before starting vitamin D ($p = 0.03$).

Comment: This preliminary study suggests that vitamin D supplementation may slow the progression of ALS among patients with baseline 25-hydroxyvitamin D levels less than 30 ng/ml. Further studies are needed to determine whether vitamin D supplementation is beneficial for all ALS patients. Because the study did not include a placebo group, it is possible that the benefit associated with vitamin D supplementation was due to a placebo effect or to the improvement some people experience simply from participating in a clinical trial. However, because of its relative safety and because of the lack of effective treatments for ALS, it would be reasonable to recommend 2000 IU per day of vitamin D for ALS patients.

Karam C et al. Vitamin D deficiency and its supplementation in patients with amyotrophic lateral sclerosis. *J Clin Neurosci.* 2013;20:1550–1553.

Importance of Iodine During Pregnancy

In a longitudinal study conducted in Tasmania, educational outcomes at 9 years of age were compared in the children of mothers who had mild iodine deficiency during pregnancy (urinary iodine concentration less than 150 μg/L) and in the children of mothers who did not have iodine deficiency during pregnancy (urinary iodine concentration greater than 150 μg/L). Pregnancy occurred during a period of mild iodine deficiency in the population, whereas the children grew up in an iodine-sufficient environment, because of the institution of iodine fortification of bread. Compared with the children of iodine-sufficient mothers, the children of iodine-deficient mothers had significantly reduced scores for spelling ($p = 0.003$), grammar ($p < 0.04$), and English literacy ($p < 0.04$). These associations remained significant after adjustment for various potential confounding factors.

Comment: It is well known that severe iodine deficiency during pregnancy can result in impaired neurocognitive development of the fetus. The results of the present study suggest that even mild iodine deficiency during pregnancy can result in long-term impairment of neurocognitive function. Pregnant women should therefore take a multivitamin-multimineral preparation that contains iodine, unless a dietary history indicates that their iodine intake is sufficient. Iodine should not be given during pregnancy in dosages substantially above the Recommended Dietary Allowance, because excessive iodine intake can lead to congenital hypothyroidism.

Hynes KL et al. Mild iodine deficiency during pregnancy is associated with reduced educational outcomes in the offspring: 9-year follow-up of the gestational iodine cohort. *J Clin Endocrinol Metab.* 2013;98:1954–1962.

Tetrahydrobiopterin for Autism Spectrum Disorders

Forty-six children (aged 3–7 years) with autism spectrum disorders were randomly assigned to receive, in double-blind fashion, tetrahydrobiopterin (BH4; 20 mg per kg of body weight per day in a single daily dose) or placebo for 16 weeks. The primary outcome measures were the Clinical Global Impressions Improvement and Severity Scales (CGI-I and CGI-S); secondary outcomes were the Preschool Language Scale-4, Social Responsiveness Scale, Aberrant Behavior Checklist, and Vineland Adaptive Behavior Scales. No significant differences were seen between groups for the primary outcomes. However, compared with placebo, BH4 significantly improved various secondary outcomes, including measures of social awareness, autism mannerisms, hyperactivity, and inappropriate speech. Twenty-five percent of the children receiving BH4 and 14% of those receiving placebo showed much or very much improvement. Side effects were minimal and were similar between groups.

Comment: As an essential cofactor for enzymes involved in the production of monoamine neurotransmitters and the metabolism of phenylalanine, BH4 may play an important role in neuropsychiatric function. Decreased concentrations of BH4 have been found in the cerebrospinal fluid of autistic children. The results of the present study suggest that supplementation with BH4 can result in behavioral improvement in children with autism spectrum disorders.

Klaiman C et al. Tetrahydrobiopterin as a treatment for autism spectrum disorders: a double-blind, placebo-controlled trial. *J Child Adolesc Psychopharmacol.* 2013;23:320–328.

◆

Still the Best

A Must Have for Kidney Function Support!

CORDIMMUNE ™

The only cordyceps product that is standardized for and declares its cordycepin content

- Supports mitochondrial function and ATP production
- Modulates immune system
- Enhances athletic performance safely
- An excellent adaptogen and adrenal support
- Supports hematopoiesis
- 0.2% Cordycepin (worth over $100 per bottle)
- 0.3% Adenosine • 22% Polysaccharides

Immune Support Beyond Just Polysaccharides!

CORIO PSP ™

The most clinically researched mushroom in Japan and China

- Unmatched 38% polysaccharides
- Lessens the side effects of toxic treatments
- Raises the quality of life
- Raises the activities of NK cells and macrophages
- Increases thymus weight

The statements herein have not been evaluated by the FDA. This product is not intended to diagnose, treat, or prevent any disease.

CRNA

CANADA RNA BIOCHEMICAL INC.
Tel: (604) 273-2233 • **www.canadaRNA.com**

1-866-287-4986

Anti-Aging Medicine

by Ronald Klatz, MD, DO, and
Robert Goldman, MD, PhD, DO, FAASP
www.worldhealth.net

Exercise Your Right to Achieve the Healthy and Fit You

The health hazards of a sedentary lifestyle have repeatedly made news headlines. From Australia to Great Britain, research teams confirm that the more a person sits, the greater the risk of chronic diseases. Emma S. George and colleagues from the University of Western Sydney (Australia) reported on their analysis of data from subjects enrolled in Australia's 45 and Up Study, involving more than 267,000 people and for which a subset of 63,048 men, aged 45 to 65 years, was selected. The team found that, compared with those who reported sitting 4 hours or less per day, those who sat for more than 4 hours per day were significantly more likely to report having a chronic disease such as cancer, diabetes, heart disease, and high blood pressure. The reporting of chronic diseases rose as participants indicated that they sat more. Those sitting for at least 6 hours were significantly more likely to report having diabetes. The study authors conclude: "Our findings suggest that higher volumes of sitting time are significantly associated with diabetes and overall chronic disease, independent of physical activity." Separate findings from Joseph Henson and colleagues from the University of Leicester (UK) report that simply rising from the chair and moving a little may help ward off type 2 diabetes among individuals at risk even more than engaging in strenuous physical activity. The team found that time spent sedentary significantly correlated to negative metabolic factors including 2-hour glucose level, high-density lipoprotein (HDL) cholesterol, and triglycerides, writing: "In adults at high risk of type 2 diabetes mellitus, time spent sedentary is strongly and adversely associated with cardiometabolic health and may be a more important indicator of poor health than [moderate-to-vigorous physical activity]."

George ES, Rosenkranz RR, Kolt GS. Chronic disease and sitting time in middle-aged Australian males: findings from the 45 and Up Study. *Int J Behav Nutr Phys Act.* 2013;10:20.

Henson J, Yates T, Biddle SJ, et al. Associations of objectively measured sedentary behaviour and physical activity with markers of cardiometabolic health. *Diabetologia.* 2013 Mar 1.

Nonexercise Activity Supports Cardiovascular Health and Longevity

Swedish researchers report that older men and women who maintain a high daily level of nonexercise physical activity are better able to maintain healthy metabolic and cardiovascular biomarkers. Elin Ekblom-Bak and colleagues from the Karolinska University Hospital (Sweden) analyzed data collected on 4332 men and women, average age 60 years, residing in Stockholm. At the study's start, nonexercise physical activity and exercise habits were assessed from a self-administrated questionnaire, and cardiovascular health was established through physical examinations and laboratory tests. The participants were followed for an average of 12.5 years for the assessment of cardiovascular disease events and mortality. The team found that at the study's start, subjects with a high level of nonexercise physical activity in daily life, regardless of regular exercise, achieved more preferable metabolic risk factors, as compared with those with low levels of physical activity. As well, a high level of nonexercise physical activity in daily life, regardless of exercising regularly or not, was also associated with a lower risk of a first cardiovascular disease event and lower all-cause mortality. The study authors conclude: "A generally active daily life was, regardless of exercising regularly or not, associated with cardiovascular health and longevity in older adults."

Ekblom-Bak E, Ekblom B, Vikström M, de Faire U, Hellénius ML. The importance of non-exercise physical activity for cardiovascular health and longevity. *Br J Sports Med.* 2013 Oct 28.

Interval Training Has Sex-Specific Effects

There is ample evidence to document tangible health benefits of routine physical activity in women. A US team explored the sex-specific benefits of high-intensity interval training (HIIT), an enhanced form of interval training in which periods of short intense anaerobic exercise alternate with less-intense recovery periods. C. Matthew Laurent and colleagues from Bowling Green University (Ohio, US) put 8 men and 8 women, aged 19 to 30 years, through self-paced HIIT using different recovery periods. All of them reported at least a moderate fitness level and

participation in at least one session of interval training a week. Participants hit the treadmill for six 4-minute intervals performed at the highest intensity that they felt they could maintain. Recovery between intervals consisted of 1 minute, 3 minutes, or 4 minutes. Throughout the intervals, their maximum oxygen consumption and heart rates were measured. Results revealed a significant effect of gender on both percentages. Across the trials, men self-selected a faster relative pace, but the women worked at a higher percentage of their maximum heart rate than the men and a higher percentage of their maximum oxygen consumption. The study authors observe: "Women may demonstrate improved recovery during high-intensity exercise, as they will self-select intensities resulting in greater cardiovascular strain."

Laurent CM, Vervaecke LS, Kutz MR, et al. Sex specific responses to self-paced, high-intensity interval training with variable recovery periods. *J Strength Cond Res.* 8 July 2013.

Exercise Lowers Breast Cancer Risk

Researchers from the American Cancer Society add to mounting evidence suggesting that physical activity reduces breast cancer risk in postmenopausal women. Alpa Patel and colleagues compared exercise and breast cancer status in 73,615 postmenopausal women taking part in the CPS-II Nutrition Cohort study. Results showed that 9.2% women reported no recreational physical activity at the beginning of the study. Among those who said that they were physically active, the average expenditure was equivalent to 3.5 hours per week of moderate walking. Among all the participants, 47% reported that walking was their only recreational activity. Physically active women tended to be leaner, more likely to maintain or lose weight during adulthood, more likely to drink alcohol, and less likely to currently smoke. They were also more likely to use postmenopausal hormone therapy and to have had a mammogram in the past year. Further analysis revealed that among those who reported walking as their only activity, those who walked for at least 7 hours per week had a 14% lower risk of breast cancer compared with those who walked 3 hours or less each week, while the most active women had a 25% lower risk of breast cancer than the least active, a finding consistent with the majority of prior studies. Risk was not found to be linked to hormone receptor status, BMI, weight gain, postmenopausal hormone use, or sitting time. "Our results clearly support an association between physical activity and postmenopausal breast cancer, with more vigorous activity having a stronger effect," said Patel. "Our findings are particularly relevant, as people struggle with conflicting information about how much activity they need to stay healthy. Without any other recreational physical activities, walking on average of at least 1 hour per day was associated with a modestly lower risk of breast cancer. More strenuous and longer activities lowered the risk even more."

Hildebrand JS, Gapstur SM, Campbell PT, Gaudet MM, Patel AV. Recreational physical activity and leisure-time sitting in relation to postmenopausal breast cancer risk. *Cancer Epidemiol Biomarkers Prev.* 2013;22:1906–1912.

Recreational Activity Reduces Blood Pressure

Remember that recreational physical activity also lowers blood pressure – and, consequently, a person's risk of stroke. Wei Ma and colleagues from the Shandong University School of Public Health (China) examined data from 13 studies involving nearly 137,000 people in order to investigate the effects of physical activity on blood pressure. Results showed that people who exercised for 1 to 3 hours each week during their leisure time had an 11% lower risk of developing high blood pressure than people who exercised for less than 1 hour each week, while the risk of developing high blood pressure dropped by 19% in those who exercised for 4 hours or more each week. Moderate and high physical activity undertaken at work had no significant effect on lowering blood pressure. The authors say that current guidelines urging people to get more exercise don't distinguish between activity at work and for leisure, and thus need to be revised. "Hypertension is a risk factor for cardiovascular and kidney disease – thus, it is important to prevent and control hypertension," said Ma. "To try to lower your risk of high blood pressure, you should exercise more in your leisure time."

Huai P, Xun H, Reilly KH, Wang Y, Ma W, Xi B. Recreational physical activity significantly lowers blood pressure physical activity and risk of hypertension: a meta-analysis of prospective cohort studies. *Hypertension.* 2013 September 30.

To stay updated on the latest breakthroughs in women's health, visit the World Health Network (www.worldhealth.net), the official educational website of the A4M and your one-stop resource for authoritative anti-aging information. Be sure to sign up for the free Longevity Magazine e-journal, your weekly health newsletter featuring wellness, prevention, and biotech advancements in longevity. ◆

The Importance and Relevance of IBS in the Female Patient

by Melanie Keller, ND; Steven Sandberg-Lewis, ND, DHANP; and Allison Siebecker ND, MSOM, LAc

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder that affects nearly twice as many women (14–24%) as men (5–19%) and is most often found in people younger than 45 years of age.[1] Studies estimate that IBS affects 3% to 20% of the adult population, with most studies ranging from 10% to 15%.[1] Only 5% to 7% of the adult population has been diagnosed with IBS, and yet it is one of the most frequent reasons for work or school absenteeism, second to the common cold.[2,3] Up to 40% of visits to gastroenterologists are for evaluation of a functional GI disorder, and IBS is the most common reason for consultation with a gastroenterologist.[4,5]

IBS symptoms include bloating, abdominal pain, constipation, diarrhea, or a mixture of constipation and diarrhea. It is common for the symptoms to wax and wane and for patients to switch from one type of bowel habit to the other over time.[5] IBS patients are also more likely to suffer from other functional gastrointestinal disorders such as dyspepsia and gastroesophageal reflux disease (GERD).[6]

Among women, IBS is most prevalent during the menstruation years, with symptoms being the most severe during the postovulatory and premenstrual phases.[4] According to studies, over 50% of women seeing a gynecologist for lower abdominal pain also have IBS symptoms, and are more likely to be diagnosed with endometriosis, and 3 times more likely to receive a hysterectomy.[4] The physicians at the SIBO Center for Digestive Health at the National College of Natural Medicine find a significant correlation between endometriosis-induced abdominal adhesions and small intestine bacterial overgrowth (SIBO). SIBO is the most common cause of IBS.

Often deemed a diagnosis of exclusion, IBS is officially diagnosed by the Rome criteria, revised in 2006 to Rome III (Table 1).[11,12] Rome III defines IBS as abdominal pain or discomfort along with changes in bowel habits at least 6 months prior, and at least 3 times a month for the last 3 months without other disease or injury. However, a recent survey of international IBS experts revealed that the majority diagnose IBS based on their own clinical experience, without the Rome criteria.[6] They believe that the current criteria do not reflect the IBS seen in their clinical practices. Notably, even those involved in creating the Rome criteria thought that the criteria did not reflect their practices. In their report, they called for a new set of criteria to be established. Specifically they identified four issues: lack of multinational validation, failure to include bloating in the criteria, a relative overemphasis on abdominal pain, and lack of a definition for pain. In particular, they wish to see a definition that includes both abdominal pain and bloating. Since bloating was believed to be a primary IBS symptom, both from published reports and based on the experience of the panel, we suggest that a reasonable approach to IBS diagnosis is to use the previous Rome II criteria, which includes bloating, along with the other symptoms (Table 2).[13]

Table 1:
Rome III Diagnostic Criteria for IBS (Rome III)

Recurrent abdominal pain or discomfort** at least 3 days/month in the last 3 months associated with two or more of the following:

1. improvement with defecation
2. onset associated with a change in frequency of stool
3. onset associated with a change in form (appearance) of stool

* Criterion fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis.
** "Discomfort" means an uncomfortable sensation not described as pain.

Table 2:
Rome II Diagnostic Criteria for IBS

At least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two out of three features:

1. relieved with defecation; and/or
2. onset associated with a change in frequency of stool; and/or
3. onset associated with a change in form (appearance) of stool.

Symptoms that cumulatively support the diagnosis of irritable bowel syndrome are defined as "abnormal" for research purposes and include abnormal stool frequency (greater than 3 bowel movements per day and less than 3 bowel movements per week), abnormal stool form (lumpy/hard or loose/watery), and abnormal stool passage (straining, urgency, or feeling of incomplete evacuation). The passage of mucus, and bloating or a feeling of abdominal distension, also supports the diagnosis.

continued on page 52 ➤

Some see a plant
We see a promise

GUARANTEED: *Pure and Potent Supplements*

DaVinci® *Laboratories of Vermont*

BP ELITE... BERBERINE FORCE... ADK

These formulas contain ingredients such as Mega-Natural®-BP, P40P™ Pomegranate, Quatrefolic®, Berberine, Grape Seed Phytosome, Hawthorn, minerals and high levels of vitamins A, D and K2 (as MK-7). These products have been specially formulated for vascular integrity, arterial elasticity, glucose and homocysteine management, blood pressure support and blood flow.*

1.800.325.1776 | www.davincilabs.com

GROW YOUR PRACTICE

Your Name - Our Quality Products. We're your one stop resource for custom formulas and private label. We have over 40 years of experience, low minimums, branded ingredients and even provide promotional assistance. Learn how to revitalize your practice and your patients today.

IBS in the Female Patient

➤ *continued from page 50*

Screening blood tests for other etiologies may be useful. Additional diagnostic tests may be needed in cases with fevers, rectal bleeding, unexplained weight loss, anemia, and/or a family history of colon cancer, inflammatory bowel disease, or celiac disease. These tests may include stool and blood testing, a lower GI series, upper endoscopy, flexible sigmoidoscopy, or colonoscopy.[2] Differential diagnosis of IBS includes SIBO, carbohydrate/fructose malabsorption, lactose intolerance, yeast overgrowth or hypersensitivity, parasitic infection, large intestine bacterial overgrowth or infection, abdominophrenic dyssynergia, celiac disease, IBD: Crohn's/ulcerative colitis, VIPoma, Zollinger-Ellison syndrome, cancer (pancreatic, stomach, small intestine), *H. pylori* infection, hypochlorhydria, and pancreatic insufficiency.

Changes in hormone status associated with pregnancy or menopause may also influence symptoms. During pregnancy, gastrointestinal symptoms may increase and intestinal transit decrease due to high estrogen and progesterone levels.[13] Reports of abdominal bloating after menopause were primarily among women who are not receiving hormone replacement therapy. The National Survey of the Effects of Changes in Female Sex Hormones on Irritable Bowel Symptoms came to the following conclusions[14]:

- Pregnancy appears to temporarily improve IBS symptoms for many women.
- Oral estrogen and progesterone do not seem to have any effect on IBS symptom levels.
- Irregular menstruation has no association with IBS symptom severity.
- Hysterectomy or tubal ligation appears to have little effect on IBS severity.
- Endometriosis increases bloating symptoms but not other symptoms in IBS.

These findings seem to suggest a hormonal influence, yet no mechanism was mentioned by the authors, which raises an interesting new focus for research.

A suggestive physiologic mechanism is progesterone levels that peak 8 to 9 days after ovulation. The variation in progesterone levels leads to increased intestinal secretions and prostaglandin production that causes contraction of colonic smooth muscle.[7] The predominant prostaglandin the endometrium produces during the premenstrual phase is PGF2μ. The release of PGF2μ leads to smooth muscle contraction, ischemia, and sensitization of nerve endings. Endometrial prostaglandin levels are three times higher in the luteal phase than in the follicular phase.[8]

An important risk factor for women with IBS is a history of physical or sexual abuse. Somatization may occur in patients with a history of abuse, leading to an expression of psychological stress through physical symptoms. An abuse

history is suggested when the patient reports an average of three additional medical symptoms, with the most common symptoms being pelvic pain, headache, genitourinary complaints, and shortness of breath. These women also report a greater pain reference scale, and spend twice the number of days in bed due to illness. They also have a greater disability in all areas of functioning, more physiological distress, and more lifetime surgeries.[4]

The SIBO Center for Digestive Health has seen a steady increase in people who continue to search for an answer to their IBS etiology. Many have gone through extensive diagnostic workup yet have not been given effective treatment. The most often prescribed recommendations for IBS begin with increasing fiber and water or the use of laxatives.[16] Depending on the presentation, opioid receptor agonists such as loperamide, antispasmodics such as hyoscine, cimetropium, pinaverium, and antidepressants such as low-dose tricyclic antidepressants and selective serotonin reuptake inhibitors may be prescribed. Rifaximin can reduce abdominal bloating by treating SIBO.[16] More people have begun to seek out practitioners such as those at the SIBO Center for a diagnosis of SIBO (2013 ICD-9 008.8/569.89, 2014 ICD-10 CM K63.89: other specified disease of the intestine) as the potential etiology for their IBS.

The most common IBS assessments used by the physicians at the SIBO Center for Digestive Health include stool screening and SIBO assessment via lactulose breath testing.[15] In some cases fructose, sucrose, lactose, and carbohydrate malabsorption may also be tested. One may also want to consider gluten intolerance, gluten cross-reactive foods, and autoimmunity.[15] We find resolution of SIBO important in the successful treatment of IBS. We also address functional syndromes such as ileocecal value syndrome and hiatal hernia syndrome, as well as functional gastrointestinal tract support via selective botanicals, digestive enzymes, and probiotics. Research has found that it is also important to address sleeping habits and patterns in the IBS patient and to offer biofeedback/mindfulness or breath training as part of treatment.[16] Many of our patients report further improvement with the addition of emotional freedom technique (EFT), or "tapping," and food hygiene education to improve digestive psychophysiology. Studies also support the use of hypnotherapy, regular exercise, and cognitive behavioral therapy with a focus on the person's thoughts and actions.[16,17]

Albion builds a better chelated mineral

Our six-stage chelation process turns non-absorbable mineral forms into easily digested and absorbed nutrients.

Start with high quality raw materials 1

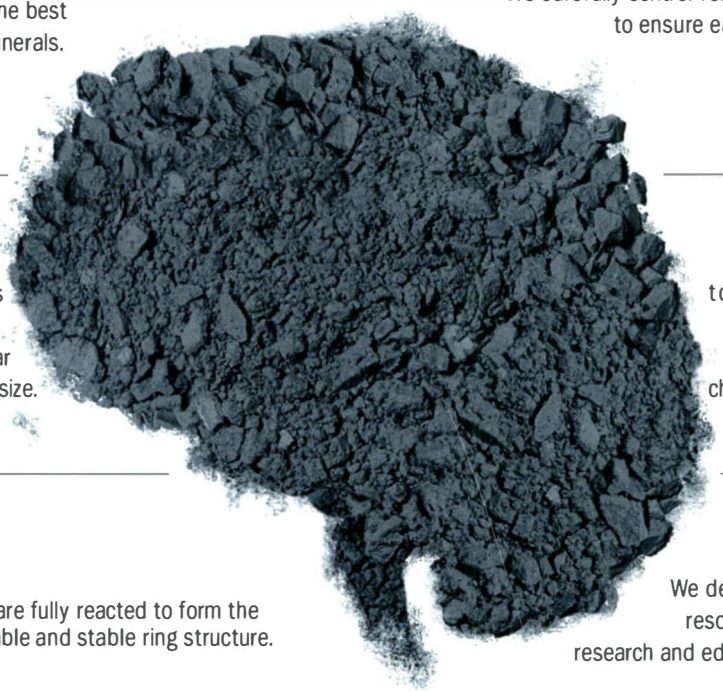
We use only the best food grade minerals.

Select quality organic ligands 2

Our organic glycine ligands have the ideal molecular structure and size.

Use patented chelation and bonding technology 3

Our minerals are fully reacted to form the most absorbable and stable ring structure.



Employ proven manufacturing processes 4

We carefully control reaction conditions to ensure each mineral form is fully chelated.

Validate structure using FT-IR 5

We use FT-IR to guarantee each batch has our signature ring chelation structure.

Continue research and development 6

We dedicate extensive resources to ongoing research and educational efforts.

Albion minerals support brain cognition.
Ferrochel® (Iron Bisglycinate Chelate), Magnesium Bisglycinate Chelate, Creatine MagnaPower® and zinc chelates all support healthy brain function/cognition. These minerals help the brain generate the energy it needs in order to power nerve cells, support the proper functioning of the brain's electrical signaling processes, and activate enzymes essential for cognitive functioning.

ALBION®
HUMAN NUTRITION
Building a Better Mineral™

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

www.SixStageChelates.com
1-800-222-0733

Look for Albion's Gold Medallion to find companies that use Albion chelated minerals in their formulations:

designs for health® Science first. | FUSION health ancient wisdom modern medicine | Metagenics® | NuMedica® Achieving Physiological Balance | Oriental Botanicals® | XYMOGEN

The physicians at the SIBO Center for Digestive Health extend an invitation to all those interested in further information on IBS and SIBO to review the recording of the 2014 1st annual SIBO Symposium: "Current Perspectives and Management of IBS." It is available through the National College of Natural Medicine's Continuing Education Department (ce.ncnm.edu).

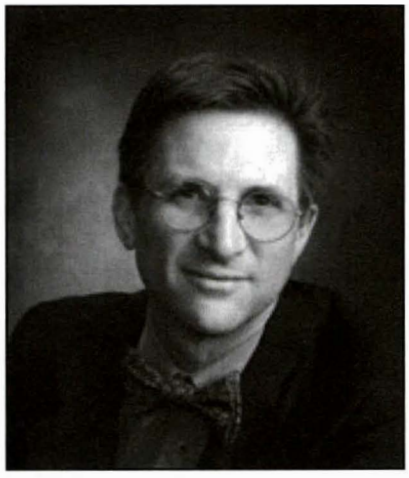
SIBO Center for Digestive Health at National College of Natural Medicine: Allison Siebecker, ND, MSOM, LAc; Steven Sandberg-Lewis, ND, DHANP; Lisa Shaver, ND, MSOM, LAc; and Melanie Keller ND

Notes

1. Grundmann O, Yoon SL. Irritable bowel syndrome: epidemiology, diagnosis, and treatment: an update for health-care practitioners. *J Gastroenterol Hepatol.* 2010;25:691–699.
2. Understanding irritable bowel syndrome [online article]. American College of Gastroenterology. www.patients.gi.org/gi-health-and-disease/understanding-irritable-bowel-syndrome. Accessed August 15, 2013.
3. Porter CK. The incidence and gastrointestinal infectious risk of functional gastrointestinal disorders in a healthy US adult population. *Am J Gastroenterol.* 2011 Jan;106(1):130–138.
4. UNC Center for Functional GI & Motility Disorders. Women and irritable bowel syndrome (IBS) [online document]. UNC School of Medicine. http://www.med.unc.edu/ibs/files/educational-gi-handouts/IBS%20in%20Women.pdf.
5. Cremonini F, Talley NJ. Irritable bowel syndrome: epidemiology, natural history, health care seeking and emerging risk factors. *Gastroenterol Clin North Am.* 2005 Jun;34(2):189–204. Review.
6. Pimentel M, Talley NJ, Quigley EM, Hani A, Sharara A, Mahachai V. Report from the multinational irritable bowel syndrome initiative 2012. *Gastroenterology.* 2013 Jun;144(7):e1-5. doi:10.1053/j.gastro.2013.04.049.
7. Kane S. Gender issues in the management of inflammatory bowel disease and irritable bowel syndrome. *Int J Fertil Womens Med.* 2002;47(3):136–142.
8. Coco AS. Primary dysmenorrhea. *Am Fam Physician.* 1999;60(2):489–496.
9. Crowell MD, Dubin NH, Robinson JC, et al. Functional bowel disorders in women with dysmenorrhea. *Am J Gastroenterol.* 1994;89(11):1973–1977.
10. Thevarajah S, Polaneczky M, Scherl EJ, Frissora CL. Hormonal influences on the gastrointestinal tract and irritable bowel syndrome. *Pract Gastroenterol.* May 2005:62–75.
11. Drossman DA, Dumitrascu DL. Rome III: New standard for functional gastrointestinal disorders. *J Gastrointestin Liver Dis.* 2006 Sep;15(3):237–441. Review.
12. Rome III Diagnostic Criteria for Functional Gastrointestinal Disorders. C1 Irritable Bowel Disease [online document]. Rome Foundation. http://www.romecriteria.org/assets/pdf/19_RomeIII_apA_885-898.pdf.: p. 889. Accessed December 7, 2013.
13. Comparison Table of Rome II & Rome III Adult Diagnostic Criteria C1 Irritable Bowel Syndrome [online document]. Rome Foundation. http://www.romecriteria.org/assets/pdf/20_RomeIII_apB_899-916.pdf.: p. 907. Accessed December 7, 2013.
13. Wald A, Van Thiel DH, Hoechstetter L, et al. Gastrointestinal transit: the effect of the menstrual cycle. *Gastroenterology.* 1981;80(6):1497–1500.
14. Lewis MJV, Houghton LA, Whorwell PJ. Abdominal distension in females with irritable bowel syndrome (IBS): the effect of the menopause and hormone replacement therapy. *Gut.* 2001;48(3 Suppl 1):A-43. Abstract #168.
15. Sandberg-Lewis S. Irritable bowel syndrome demystified. Functional Gastroenterology Webinar Series. FMTown.com.
16. Irritable bowel syndrome [Web page]. National Digestive Diseases Information Clearinghouse (NDDIC). http://digestive.niddk.nih.gov/ddiseases/pubs/ibs.
17. Moser G, Trägner S, Gajowniczek EE, et al. Long-term success of GUT-directed group hypnosis for patients with refractory irritable bowel syndrome: a randomized controlled trial. *Am J Gastroenterol.* 2013 Apr;108(4):602–609. doi:10.1038/ajg.2013.19. Epub 2013 Feb 19.

◆

Melanie Keller, ND, is in private practice, Natural Functional Medicine LLC in Portland, Oregon, and is one of the private practice physicians at the SIBO Center for Digestive Health at the National College of Natural Medicine (NCNM). During her training at NCNM she had an extensive internship with Dr. Steven Sandberg-Lewis, followed by postgraduate training with Dr. Allison Siebecker. Her areas of focus include SIBO, IBS, functional gastroenterology, and musculoskeletal medicine. Dr. Keller utilizes functional testing, nutrition, energetic psychology techniques, and visceral and structural manipulation to address the whole person.



Steven Sandberg-Lewis ND, DHANP, has been a practicing naturopathic physician for 35 years, previously on Orcas Island in Washington State and now exclusively at the NCNM Clinic. Dr. Sandberg-Lewis receives referrals of patients with digestive diseases who desire naturopathic treatment options; often these are conditions that have defied diagnosis by other physicians. He understands the diseases of the gastrointestinal tract, but also can assess function and often find successful treatments to regain normal function of the digestive system.

Allison Siebecker, ND, MSOM, LAc, has worked in the nutritional field since 1988 and is a 2005 graduate of NCNM where she earned her doctorate in naturopathic medicine and her masters in Oriental medicine. Dr. Siebecker is the medical director of the SIBO Center for Digestive Health at NCNM Clinic in Portland, Oregon, where she specializes in the treatment of SIBO. She is instructor of advanced gastroenterology at NCNM, teaches continuing education classes for physicians, is the author of the educational website siboinfo.com, and is writing a book synthesizing the SIBO data into one source. In 2005 and 2013, she received the Best in Naturopathy award from the *Townsend Letter* for her articles "Traditional Bone Broth in Modern Health and Disease"(2005) and "Small Intestine Bacterial Overgrowth: Often Overlooked Cause of IBS" (2013).

The Integrated Treatment of Postmenopausal Osteoarthritis

by Alena Guggenheim, ND, and Carla Guggenheim, DO, FACP, with thanks to Nicholas Morgan, ND

Epidemiology

Primary osteoarthritis (OA) is common, costly, and crippling. Postmenopausal OA is associated with degeneration, commonly found in hands, knees, and hips. Contributing factors include metabolic, genetic, epigenetic, inflammatory, and mechanical factors. The significance of these interactions is incalculable, but not inconsequential.

In 2009, 40 to 50 million US adults were diagnosed with arthritis.[1] In 2003, the arthritides accounted for 1% of the gross domestic product, or nearly $81 billion in medical expenditures and $47 billion in lost earnings.[2] The incidence of OA increases with age, rising from 27% in those under 70 years old to 44% in those over 80 years old. Obesity confers the highest lifetime risk.[3]

Body mass index (BMI) >27 kg/m^2 is associated with increased risk for knee OA in a cohort of 3585 persons >55 years old.[3] High heels may increase risk of OA due to increased force across the knee joints.[4]

BMI ≥ 32 kg/m^2 is associated with 2 to 3 times the risk for total hip replacement in a study of 1,152,006 Norwegians aged 18 to 67 years.[5] 41% of people over age 40 have hand OA; women are more affected than men.[6]

Signs and Symptoms

The symptoms of OA include slowly developing arthralgia, stiffness after stillness, increasing pain as the day progresses, and weakness. Full range of motion is initially uncomfortable and eventually limited. Signs of OA in the hands include limited closure, bony enlargement of distal and proximal interphalangeal joints, carpometacarpal squaring, limited thumb extension, thenar wasting, and thumb in palm formation. In knees, flexion and then extension are limited and motion is often painful and crepitant. Popliteal cysts, cool effusions, vastus medialis obliquus wasting, and valgus or varus deformities can be seen. In the hip, pain is often limited to the groin, inner thigh, or knee alone. Internal rotation is often uncomfortable and limited. Psoas contractures and limited abduction can be seen. X-ray findings can be deceiving! Horrible bone-on-bone osteoarthritis can be seen in an absolutely asymptomatic weight-bearing joint.

Conventional Treatment

Treatments for OA in all sites include weight management, exercise, analgesics, selective and nonselective nonsteroidals (sNSAIDs/nsNSAIDs), topical pharmaceuticals, bracing, special shoes, electrical stimulation, laser therapy, manipulative therapy, physical and occupational therapy, intra-articular steroids, mobility aids (cane, walker, wheel chair), viscosupplementation, arthroscopy, and partial or total joint arthroplasty.

Acetaminophen is weakly analgesic, and narcotics should be reserved for brief perisurgical periods.[7] Although NSAIDs are strongly recommended, all NSAIDs increase risk of gastrointestinal bleeding. Both sNSAIDs and nsNSAIDs, excluding aspirin, increase risk of stroke, and myocardial infarction.[7] NSAIDs should be used sparingly and for short duration and may be used in concert with acetaminophen. Oral NSAIDs (both types) should not be used in any patient over 75 years of age, as they may cause sodium retention, reduce glomerular filtration and worsen hypertension even with short-term use.[7,8] Tramadol provides some relief but its use is limited because of frequent adverse reactions. Topical capsaicin and NSAIDs are modestly efficacious and safe.[8] Manipulative therapies should be offered only as adjunct to exercise.[7]

Hands

Few high-quality randomized controlled trials (RCTs) on hand OA exist. Expert opinion and our clinical experience support the following: evaluation of independent daily living activities, joint protection, work simplification instruction, thermal modalities, and splinting. Intra-articular injection therapies are not recommended in the hand.[7]

Knees

There are data both supporting and refuting patellofemoral bracing, electrical stimulation, wedged insoles, acupuncture, manual therapy, and shoe modifications.[7,9–11]

Intra-articular steroids provide brief pain relief and should be used sparingly if at all. Acute adverse reactions are rare but include increased serum glucose, avascular necrosis, acute synovitis, acute calcium pyrophosphate deposition, infection, tendinopathy, and periarticular calcifications. Long-term adverse reactions include capillary fragility, tissue atrophy, joint destruction, and cartilage degeneration.[12] The common practice of combining intra-articular steroids and local anesthetic causes chondrocyte death.[13] The American Academy of Orthopedic Surgeons (AAOS) does not recommend intra-articular steroid injections, but the American College of Rheumatology does.[7,9]

Intra-articular viscosupplementation with hyaluronic acid has been recommended for patients with mild to moderate knee OA who have failed conservative treatment, but its efficacy is unproven and it is falling out of favor.[5,7,9,12,14] Partial meniscectomy for torn meniscus may be considered, if conservative measures fail, but it is possible to live with a torn meniscus if activity is judicious.[9]

Hips

Intra-articular steroids can be used, but expensive imaging is needed for proper needle placement and they are not that helpful for ordinary OA. Hyaluronic acid has not been approved for use in the hip. Arthroscopy can be helpful in cases of torn labrum.[15] Severe OA of the hip may be tolerated well for years, unlike severe knee OA, which is less tolerated.

Exercise

Exercise must be part of a conventional or integrative approach to OA, but formulating optimal individualized exercise can be challenging. Supervised group exercise is superior to nonsupervised activity.[16] Tai chi, qi gong, yoga, and Feldenkrais method have shown positive results. In an observational study, Webb showed improvement in multiple gait parameters in community-dwelling adults with OA after participation in twice-weekly Feldenkrais method classes over a 30-week period.[17]

Yoga and tai chi are the only disciplines that have been studied using systematic reviews. Cramer found two high-quality studies recommending yoga for OA pain reduction.[18] Evidence is currently stronger for tai chi. A systematic review of three high-quality RCTs found that tai chi improved gait and reduced stiffness and pain for knee OA patients.[19] Studies have also shown that tai chi increases OA patients' quality of life.[20]

Exercise reduces pain and improves physical strength, balance, metabolism, and mood. Many OA patients view their bodies as a source of pain, discomfort, and sadness. Exercise forms such as tai chi and yoga can provide pleasure and joy.

Mind-Body Medicine

Living with any chronic pain can be devastating emotionally, socially, financially, and spiritually. A truly holistic treatment plan for postmenopausal OA must address the mind-body connection. Many formalized techniques improve pain, hot flashes, cognitive function, insomnia, and quality of life.[21–26] Mindfulness-based stress reduction (MBSR) is one such well-studied system. Designed by Jon Kabat-Zinn, PhD, it teaches somatic awareness and meditation. Ussher found that even 10 minutes of MBSR practice decreased pain compared with controls who read natural history literature.[27] Rosenzweig found that an 8-week course in MBSR had the most significant effect on patients with arthritis and back/neck pain compared with other diseases. While still significant, the MBSR program has less effect on headache and fibromyalgia. Patients with concomitant meditation practice had even greater improvements in pain and quality of life.[28]

Phytochemical and Herbal Treatments

Many phytochemicals and herbs have been studied for OA treatment. This review will focus on epigallocatechin-3-gallate (EGCG), sulforaphane, resveratrol, *Curcuma longa*, *Boswellia serrata*, and *Harpagophytum procumbens*.

EGCG, a phytochemical present in green tea, is being researched intensely for its impact on many conditions, including cerebral hemorrhage, liver disease, infection, cancer, atherosclerosis, inflammatory joint disease, and OA.[29]

Basic scientists are discovering and elucidating the molecular mechanisms of EGCG; however, good clinical RCTs OA studies have not yet been conducted. An in vitro study of EGCG showed 2 important effects in inflamed chondrocytes; inhibition of IL-1, TGF β, IL-8, and chemokine ligand 2, as well as reduced neutrophil and monocyte migration.[30] In another in vitro model, EGCG prevented production of IL-6, IL-8, monocyte chemotactic protein-1 (MCP-1), MCP-3, and macrophage inflammatory protein-1beta (MIP-1b) via NF-κB in inflamed chondrocytes.[31] The chondroprotective role of EGCG may also be due to increased resistance to metalloproteinases 1, 9, and 13.[32] EGCG may also work on cyclooxygenase 2 (COX-2), prostaglandin E2 (PGE2), TNFα, and advanced glycation end products (AGEs).[33,34] Huang stimulated human synovial fibroblasts with IL-1β and found that the application of EGCG inhibited COX-2, PGE2, and IL-8.[33]

Clearly, human studies are lacking; but, given green tea's safety, it is reasonable to advise drinking high-quality, organic green tea or use a green tea product standardized for EGCG. A rational and well-tolerated starting dose of EGCG is 100 to 300 mg daily.

Curcuma longa is one of the best-studied herbs in the treatment of osteoarthritis. There are abundant in vitro, in vivo, clinical studies, and systematic reviews that support ➤

its use. It appears to work by inhibiting IL-1β, IL-6, IL-8, NF-κB, TNFα, MMP-3, MMP-9, MMP-13, caspase-3, and COX-2 and enhancing chondrogenesis.[35–41] NF-κB activation can directly trigger matrix degrading enzymes. Curcumin reduces production of AGEs that lead to chondrocyte destruction.[36] Interestingly, it appears that curcumin and resveratrol synergistically protect chondrocytes by downregulating NF-κB and reducing pro-inflammatory cytokines.[38,42,43] Shakibaei pretreated in vitro chondrocytes with curcumin, resveratrol, or the combination. He then applied IL-1β and observed the catabolic effects. He found that the combination provided superior protection compared with each phytochemical alone.[42]

Strong in vitro studies of curcumin encouraged in vivo studies for patients with OA. Three well-performed clinical trials support its use in knee OA. Knee OA is easily studied because outcome measures and radiographic features are well characterized. A randomized, double-blind study compared diclofenac 75 mg/d + placebo with diclofenac 75 mg/d + curcumin 1000 mg/d for 3 months. Diclofenac and curcumin demonstrated superiority for decreasing pain and improving function.[44] In an in vivo comparison of boswellia (frankincense) + curcumin (500 mg b.i.d.) with celecoxib 100 mg b.i.d., the herbal formulation outperformed celecoxib on symptom scoring. No safety issues were found with the herbal formulation.[45]

The form of curcumin is critical for absorption. There are multiple proprietary forms of curcumin that enhance absorption. Examples are quality curcumin complexed with phosphatidylcholine, BCM-95 (curcumin with essential oil of curcumin), and curcumin dispersed with colloidal nanoparticles. To date there has not been a study comparing each of these forms with the other, although they each have strong evidence supporting increased absorption. BCM-95 has been shown to have a 6.93-fold increase in absorption compared with standardized curcumin.[46] Curcumin dispersed with colloidal nanoparticles was shown to increase blood concentration levels 27-fold higher compared with plain curcumin.[47] Curcumin complexed with phosphatidylcholine has shown a 29-fold higher blood concentration level.[48] It must be stressed that the absorption research has been performed by industry and each uses different standardized curcumin products as a control.

Curcumin complexed with phosphatidylcholine is the only proprietary form of curcumin that has been studied in patients with osteoarthritis. Belcaro performed a 10-month placebo-controlled study examining clinical efficacy and biometric end points such as IL-1beta, IL-6, and ESR. It proved superior in WOMAC score (a standardized questionnaire to access pain, stiffness, and physical function), Karnofsky Performance Scale Index, and most biometric end points.[49] We often start with high-quality curcumin, loading doses between 1 and 3g/d in divided doses for 2 weeks, then decrease to efficacy. If patients are allergic to soy, some forms of curcumin cannot be used.

Boswellia serrata is another herb that has many different formulations. Several forms are standardized for boswellic acid, 5-Loxin, and proprietary resins. One of these resins was studied in a double-blind RCT for efficacy of treating OA pain and dysfunction. While the trial was only 30 days, statistically significant improvement was first seen at day 5, indicating that this form of boswellia may be effective for acute pain management.[50] 5-Loxin has also been studied in a similar manner. Sengupta studied 2 different dosages of 5-Loxin (100 mg/d and 250 mg/d) and compared them with placebo and followed patients for 90 days.[51] This study's strength was that it measured MMP-3 from knee synovial fluid before and after treatment. At the dosages of both 100 mg/d and 250 mg/d, 5-Loxin showed significant improvement in pain at 7 days that continued until study's end. On a molecular level, boswellia shows many similarities to curcumin. There appears to be strong inhibition of iNOS, MMP-9, MMP-13, NF-κB, TNFα, IL-1, IL-2, IL-4, IL-6, and IFNγ, and the complement system.[52,53]

The *British Medical Journal* recently published a systematic review of RCTs studying boswellia in several diseases. It found encouraging evidence that boswellia was an effective and safe treatment for osteoarthritis.[54]

Sulforaphane is another promising phytochemical. It belongs to the isothiocyanate group of organosulfur compounds from sprouted cruciferous vegetable seeds, such as broccoli seeds. Intense research on sulforaphane's antineoplastic, antimicrobial, and anti-inflammatory properties is currently being performed. While no human trials in OA patients have yet been performed, we are beginning to understand molecular mechanisms which suggest that it will be efficacious. Sulforaphane appears to activate the cytoprotective transcription factor Nrf2, downregulate NF-κB, decrease MMP-1 and MMP-13, and protect against cartilage degradation in a mouse model and in vitro.[55–57]

Harpagophytum procumbens (devil's claw) has a long history of use in traditional Western herbalism for arthritis treatment and an established safety record.[58] In vitro evidence suggests that devil's claw inhibits TNFα, IL-6, IL-1β, PGE2, NF-κB, and COX-2.[59,60] Systematic reviews suggest that a dosage of 60 mg/d harpagoside is effective for knee and hip OA.[61] This bitter herb is also a mild diuretic, mild sedative, and appetite stimulant. We find that it is a good choice for anxious patients with sluggish digestion.

The size and quality of trials evaluating herbal interventions is growing rapidly and reaching wider audiences. One such article appeared in Oxford's *Rheumatology* in late 2013. In a large randomized, double-blind, parallel-efficacy trial of 440 patients, Chopra compared an Ayurvedic formulation of *Tinospora cordifolia, Zingiber officinale, Emblica officinalis,* and *Boswellia serrata* with celecoxib (200 mg daily) and glucosamine (2g daily) and found outcomes equivalent at 6 months for all 3 treatments.[62]

Balneotherapy

Balneotherapy is a traditional term to describe spa therapies that often include mud packs and hyperosmolar mineral bathing. It is an easy-to-follow, low-cost treatment that can be combined with mindfulness-based meditation.

Mud application to the knee was found to be superior to control for WOMAC and pain scoring in a recent meta-analysis of 7 RCTs.[63] The difficulty with this analysis is that the dosage of mud applications and follow-up time period for each study were different. This suggests that a 20-minute application of mud, 5 times weekly for 2 weeks, is effective up to 3 months, although it should be noted that even 3 mud-based therapies combined with mineral bathing over the course of a year have been found to be efficacious.[64] Mud therapy has also been compared with intra-articular hyaluronic acid, yielding equivalent results at 6 months; but mud is safer.[65] In our experience, mud therapy works well for hand and knee OA but is a difficult treatment for hip OA due to the "messiness" factor.

Many of the studies evaluating balneotherapy have been performed at the Dead Sea or thermal spas in Europe. An observational study found that 2 mineral baths within 2 weeks improved gait, pain, and WOMAC scores.[66] Evcik compared mud therapy, mineral bathing, and hot packs applied to the knee for 20 minutes 5 times weekly for 2 weeks and found that all therapies improved WOMAC scores.[67]

In our practice, recreating mineral baths in the patient's own home is highly effective and well tolerated, as patients find it easy and pleasurable. Patients are instructed to purchase bulk Dead Sea salt and use 5 to 7 cups per 52-gallon bathtub. We often start with 3 to 5 baths per week then taper to once weekly when the patient has stabilized. Water temperature may prove important, but has not been well studied in OA.

Vitamin D

Although the prospect seems sensible, it is controversial whether vitamin D status affects OA disease risk or progression. One epidemiological study suggests that low intake and low serum levels of vitamin D each appear to be associated with an increased risk for progression of knee OA.[68] Two RCTs have been performed; one showing benefit in OA patients that had a baseline vitamin D $\leq$ 50 nmol/L given 60,000 IU daily for 10 days, then 60,000 IU monthly for 12 months.[69] The other RCT found no benefit in patients who were dose-escalated to serum 25(OH) vitamin D levels of >36 nmol/L and followed for 2 years.[70] It should be noted that both articles had serious limitations in that optimal 25 OH vitamin D levels were never achieved. In clinical practice, we aim to raise patients' serum 25(OH) vitamin D3 levels ~150 nmol/L or 60ng/ml. We base our recommendations on the additional benefits of reducing cancer and osteoporosis risks.

Polyunsaturated Omega-3 Fatty Acids (PUFA-3)

To date, the research supporting the use of long-chain ω-3 essential fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), is much stronger for inflammatory arthritides such as rheumatoid arthritis. It is a relatively new concept to think about osteoarthritis as an inflammatory process, and thus we have not yet fully explored the use of EPA and DHA for clinical efficacy. From a mechanistic, animal-based model, PUFA-3 decreases IL-1β-mediated cartilage degradation, decreases MMP-2, and improves collagen cross-links.[71,72] In humans,

➤

our most compelling evidence was performed during the Multicentre OA Study (MOST). Baker examined plasma omega-6 and omega-3 fatty acid levels in 472 adults considered to be at risk of OA.[73] Knee synovitis seen on MRI was evaluated in relation to serum fatty acids and cartilage morphology. They found that patients with higher omega-6 plasma levels had increased synovitis, low DHA, and patellofemoral cartilage loss. These data are intriguing but inadequate to provide definitive evidence supporting routine supplementation for OA. Despite this, PUFA-3 therapy has been shown to have an NSAID-sparing effect in RA and has collateral heart protection with a high safety profile.[74]

If PUFA-3 is prescribed to patients with OA, caution should be taken if the patient is on blood-thinning medications or has a bleeding disorder. Only fish oil that has been third–party verified to be free of PCBs and heavy metals should be used. In light of the Fukushima accident, fish oil may need additional safety testing.

Glucosamine/Chondroitin

Glucosamine and chondroitin have long been touted as the natural medicine treatment of choice for OA and enjoy more research than any other natural substance. Even after a decade of research, the true efficacy of glucosamine and chondroitin is not clear. Glucosamine appears to work by decreasing IL-1B, NF-κB, MMP-2, MMP9, and COX-2 and via induction of anabolic mediators such as transforming growth factor (TGF)-β1 and connective tissue growth factor (CTGF). Chondroitin shows similar effects by decreasing IL-1B, NF-κB, MMP-1, MMP-3, and MMP-13 and conversely increasing type II collagen and proteoglycan synthesis in human articular chondrocytes.[75]

RCTs have conflicting outcomes. Most studies have been small or poorly performed. That said, compelling evidence for the clinical use of glucosamine was recently published by Bertin and Taieb.[76] They analyzed data from 11,772 patients and found that those who used glucosamine took significantly less NSAIDs. If glucosamine and chondroitin allow a patient to decrease intake of a potentially harmful medication, even when true efficacy is not proven, it is reasonable to prescribe them in a clinical setting.

Glucosamine and chondroitin may not be safe for use in patients with chronic liver diseases, although these data are highly circumstantial.[77] We advise caution in treating chronic liver disease patients with glucosamine and chondroitin.

Platelet Rich Plasma (PRP)

It is beyond the scope of this article to fully address the research and impact of platelet rich plasma injection into OA joints. However, given the body of evidence, it should not be overlooked as a safe and effective treatment for many OA patients, especially those facing total joint replacement therapy. The research of PRP is rapidly expanding and has been overall positive. PRP appears to release growth factors that can increase meniscal and chondrocyte growth.[78–80] It has been found in multiple trails to be superior to hyaluronic acid injection for pain, function, and radiographic features.[81,82]

Diet

We often tell our patients that no amount of supplements can compensate for poor diets, no matter what the disease. We have just spent a good deal of time discussing the dietary supplements for OA management in women; now we must turn our attention to diet. Unfortunately, diet is an incredibly difficult subject to study within the current scientific paradigm. If we rely on research alone, we can only make broad statements; for example, a diet low in vitamin K or magnesium or high in soda may contribute to disease progression.[83–85] Our recommendations on diet are therefore based on our collective 31 years of clinical practice. Most patients are prescribed a diet that is more than 90% vegetables, fruits, raw nuts and seeds, eggs, pasture-raised meat, olive oil, grapeseed oil, and coconut oil. A good diet contains less than 10% grains (whole or refined), dairy, sugars, conventionally raised meat, processed meats, and vegetable oils (corn, peanut, etc.). Patients are also advised to eat 3 cups of cruciferous vegetables and 3 cups of dark leafy greens per day. Helping the patient focus on what to eat, rather than foods to avoid, acts to "crowd out" nutrient-poor dietary choices.

While purely anecdotal, a recent patient story illustrates the importance of diet. A 48-year-old, morbidly obese female presented with severe bilateral knee OA looking for alternatives to knee surgery, which was recently discussed as her only option for care. Fatigue and pain precluded exercise. She was prescribed the diet described above. At 6 weeks she was walking without a cane, able to walk up and down stairs, and had enough energy to start a light exercise program. Then one night she succumbed to food cravings and ate an entire pepperoni pizza. Within 12 hours she was unable to get out of bed and photodocumented her knees more than doubling in size. She spent the next 3 days in bed. Needless to say, she returned to her healthful eating routines and has continued to improve.

Conclusion

Osteoarthritis can be devastating and life changing. Integrative and conventional physicians agree on prevention through diet and exercise. We believe that high-quality supplements are crucial for patient safety, strong clinical studies, and limiting the need for potentially dangerous pharmaceuticals. Patient safety is paramount, pharmaceuticals

fall short, regenerative techniques are promising but unproven, and surgery should be a last resort.

Integrative physicians believe that Mediterranean/Paleolithic diets provide energy and substrate for patients to exercise and repair their tissues. We attempt to coach patients through the game of life with osteoarthritis, enabling joyful and easy movement. Because OA risk factors are multifactorial, we believe that utilizing multiple therapies is essential and guides our holistic approach of diet, exercise, meditation, modalities, and nutraceuticals. We have shown that there is growing evidence for each of these synergistic interventions. We strongly encourage future research to include study of *medical-grade* supplements, excluding inferior products to ensure study validity. We would also like to see multifaceted clinical models to evaluate effectiveness of the holistic approach.

Notes

1. Centers for Disease control and Prevention (CDC). Prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation- United States, 2007–2009. *MMWR Morb Mortal Wkly Rep*. 2010:59(39):1261–1265.
2. Yelin E et al. Medical care expenditures and earnings losses among persons with arthritis and other rheumatic conditions in 2003, and comparisons with 1997. *Arthritis Rheum*. 2007;56(5):1397–1407.
3. Reijman M, Pols HA, Bergink AP, Hazes JM, Belo JN, Lievense AM, Bierma-Zeinstra SM. Body mass index associated with onset and progression of osteoarthritis of the knee but not of the hip: the Rotterdam Study. *Ann Rheum Dis*. 2007 Feb;66(2):158–162. Epub 2006 Jul 12.
4. Kerrigan DC, Todd MK, Riley PO. Knee osteoarthritis and high-heeled shoes. *Lancet*. 1998 May 9;351(9113):1399–1401.
5. Flugsrud GB, Nordsletten L, Espehaug B, Havelin LI, Engeland A, Meyer HE. The impact of body mass index on later total hip arthroplasty for primary osteoarthritis: a cohort study in 1.2 million persons. *Arthritis Rheum*. 2006 Mar;54(3):802–807.
6. Wilder FV, Barrett JP, Farina EJ. Joint-specific prevalence of osteoarthritis of the hand. *Osteoarthritis Cartilage*. 2006 Sep;14(9):953–957. Epub 2006 Jun 8.
7. Hochberh M, Altman RD, April KT, et al. American College of Rheumatology 2012 Recommendations for the use of Nonpharmacologic and Pharmacologic Therapies in Osteoarthritis of the Hand, Hip and Knee. *Arthritis Care Res*. April 2102;64(4):465–474.
8. Roubille C, Martel-Pelletier J, Davy JM, Haraoui B, Pelletier JP. Cardiovascular adverse effects of anti-inflammatory drugs. *Antiinflamm Antiallergy Agents Med Chem*. 2013;12:55–67.
9. Jevsevar DS. Treatment of osteoarthritis of the knee: evidence-based guideline, 2nd edition. *J AM Acad Orthop Surg*. 2013;21:571–576.
10. Schnitzer TJ, Pelletier JP, Haselwood DM, et al. Civamide cream 0.075% in patients with osteoarthritis of the knee: a 12-week randomized controlled clinical trial with a longterm extension. *J Rheumatol*. 2012 Mar;39(3);610–620. doi:10.3899/jrheum, 110192. Epub 2011 Nov 15.
11. Shakoor N, Lidtke RH, Sengupta M, Fogg LF, Block JA. Effects of specialized footwear on joint loads in osteoarthritis of the knee. *Arthritis Rheum*. 2008 Sep 15;59(9): 1214–1220.
12. Cheng OT, Souzdalnitski D, Vrooman B, Cheng J. Evidence based knee injections for the management of arthritis. *Pain Med*. 2012 June:13(6):740–753.
13. Farkas B, Kvell K, Bardos T. Increased chondrocyte death after steroid and local anesthetic combination. *Clin Orthop Relat Res*. 2010 Nov;468(11):3112–3120.
14. Rutjes AWS, Juni P, da Costa BR, Trelle S, Nuesche E, Reichenbach S. Viscosupplementation for knee osteoarthritis. *Ann Intern Med*. 2012 Aug;157(3):I-36. *Arthritis Rheum*. 2006 Mar;54(3):802–807.
15. Akhtar M, Campton L. Hip arthroscopy: west of Scotland experience. *Br J Sports Med*. 2013;47:e4 doi:10.1136/bjsports-2013-093073.10.
16. Kudo M, Watanabe K, Otsubo H, Kaneko F, Katayose M, Yamashita T. Analysis of effectiveness of therapeutic exercise for knee osteoarthritis and possible factors affecting outcome. *J Orthop Sci*. Epub 2013 Oct. 2.
17. Webb R, Cofré Lizama LE, Galea MP. Moving with ease: Feldenkrais Method classes for people with osteoarthritis. *Evid Based Complement Alternat Med*. 2013;2013: 479142. doi:10.1155/2013/479142. Epub 2013 Sep 3.
18. Cramer H, Lauche R, Langhorst J, Dobos G. Yoga for rheumatic diseases: a systematic review. *Rheumatology (Oxford)*. 2013 Nov;52(11):2025–2030. doi:10.1093/rheumatology/ket264. Epub 2013 Aug 9.
19. Lauche R, Langhorst J, Dobos G, Cramer H. A systematic review and meta-analysis of Tai Chi for osteoarthritis of the knee. *Complement Ther Med*. 2013 Aug;21(4):396–406. doi: 10.1016/j.ctim.2013.06.001. Epub 2013 Jul 1.
20. Hartman CA, Manos TM, Winter C, Hartman DM, Li B, Smith JC. Effects of T'ai Chi training on function and quality of life indicators in older adults with osteoarthritis. *J Am Geriatr Soc*. 2000 Dec;48(12):1553–1559.
21. Woods NF, Mitchell ES, Schnall JG, et al. Effects of mind-body therapies on symptom clusters during the menopausal transition and early postmenopause: a systematic review. *Climacteric*. 2013 Aug 12.
22. Keefe FJ, Porter L, Somers T, Shelby R, Wren AV Psychosocial interventions for managing pain in older adults: outcomes and clinical implications. *Br J Anaesth*. 2013 Jul;111(1):89–94. doi:10.1093/bja/aet129.
23. Flugel Colle KF, Vincent A, Cha SS, Loehrer LL, Bauer BA, Wahner-Roedler DL. Measurement of quality of life and participant experience with the mindfulness-based stress reduction program. *Complement Ther Clin Pract*. 2010 Feb;16(1):36–40. doi:10.1016/j.ctcp.2009.06.008. Epub 2009 Jul 8.
24. Marchand WR. Mindfulness-based stress reduction, mindfulness-based cognitive therapy, and Zen meditation for depression, anxiety, pain, and psychological distress. *J Psychiatr Pract*. 2012 Jul;18(4):233–252. doi:10.1097/01.pra.0000416014.53215.86.
25. Carlson LE. Mindfulness-based interventions for physical conditions: a narrative review evaluating levels of evidence. *ISRN Psychiatry*. 2012 Nov 14;2012:651583. doi:10.5402/2012/651583. Print 2012.
26. Copland C, Nicolaou A, Cargill A, Amini-Tabrizi N, McCracken LM. Immediate effects of a brief mindfulness-based body scan on patients with chronic pain. *J Behav Med*. Epub 2012 Nov 6.
27. Ussher M, Copland C, Nicolaou A, Cargill A, Amini-Tabrizi N, McCracken LM. Immediate effects of a brief mindfulness-based body scan on patients with chronic pain. *J Behav Med*. Epub 2012 Nov 6.
28. Rosenzweig S, Greeson JM, Reibel DK, Green JS, Jasser SA, Beasley D. Mindfulness-based stress reduction for chronic pain conditions: variation in treatment outcomes and role of home meditation practice. *J Psychosom Res*. 2010 Jan;68(1):29–36. doi:10.1016/j.jpsychores.2009.03.010.
29. Mak, JC. Potential role of green tea catechins in various disease therapies: progress and promise. *Clin Exp Pharmacol Physiol*. 2012;39:265–273.
30. Oliviero F, Sfriso P, Scanu A, Fiocco U, Spinella P, Punzi L. Epigallocatechin-3-gallate reduces inflammation induced by calcium pyrophosphate crystals in vitro.

➤

Alena Guggenheim attended Reed College in Portland, Oregon, and graduated with a BA in biology in 2001. In 2007 she graduated from the National College of Natural Medicine with a doctorate in naturopathic medicine. In 2009 she completed a residency through National College of Natural Medicine and the Center For Natural Medicine mentored by Dr. Martin Milner that focused on cardiopulmonary medicine. During her education she participated in research regarding immune modulation with herbs and personality implications on health. In 2011 she began teaching in the Master of Science in Integrative Medicine Research (MSiMR) and Doctorate of Naturopathic Medicine programs at NCNM. She teaches clinical physical diagnosis, rheumatology, microbiology and an integrative modalities course. She also mentors students completing the MSiMR program. Her research focuses on immune modulation by mushrooms.

Dr. Guggenheim maintains a private practice at the Center For Natural Medicine in Portland, the first naturopathic clinic in the country to be a certified Patient Centered Primary Care Home. She provides holistic primary care with a focus on rheumatological diseases such as rheumatoid arthritis and lupus.

Carla Guggenheim, DO, FACP, is a board-certified rheumatologist and fellow of the American College of Physicians. Her undergraduate degree is in dance. She completed her DO degree at Des Moines University in 1988, DO rotating internship and internal medicine residency at Michigan State University in 1992, and rheumatology residency at the University of Iowa in 1994. She is clinical faculty at Michigan State University and National College of Natural Medicine. She is director of the first naturopathic rheumatology residency in the US.

Nicholas Morgan, ND, is a second-year resident at Arthritis Care PC in Lansing, Michigan, where he also founded the Center for Integrative Wellness. He graduated from NUHS in 2011 and is the first naturopathic rheumatology resident in the US. Dr. Morgan's medical interests include arthritis prevention, epigenetics/nutrigenomics, functional medicine, and methylation management. In addition to practicing medicine, he enjoys teaching and public speaking to help increase awareness about the benefits of person-centered health care.

Front Pharmacol. 2013 Apr 17;4:51. doi:10.3389/fphar.2013.00051. eCollection 2013.

31. Akhtar N, Haqqi TM. Epigallocatechin-3-gallate suppresses the global interleukin-1beta-induced inflammatory response in human chondrocytes. *Arthritis Res Ther.* 2011 Jun 17;13(3):R93. doi:10.1186/ar3368.
32. Ahmed S. Green tea polyphenol epigallocatechin 3-gallate in arthritis: progress and promise. *Arthritis Res Ther.* 2010;12(2):208. doi:10.1186/ar2982. Epub 2010 Apr 28.
33. Huang GS, Tseng CY, Lee CH, Su SL, Lee HS. Effects of (-)-epigallocatechin-3-gallate on cyclooxygenase 2, PGE(2), and IL-8 expression induced by IL-1beta in human synovial fibroblasts. *Rheumatol Int.* 2010 Jul;30(9):1197–203. doi:10.1007/s00296-009-1128-8. Epub 2009 Sep 24.
34. Rasheed Z, Anbazhagan AN, Akhtar N, Ramamurthy S, Voss FR, Haqqi TM. Green tea polyphenol epigallocatechin-3-gallate inhibits advanced glycation end product-induced expression of tumor necrosis factor-alpha and matrix metalloproteinase-13 in human chondrocytes. *Arthritis Res Ther.* 2009;11(3):R71. doi:10.1186/ar2700. Epub 2009 May 15.
35. Buhrmann C, Mobasheri A, Matis U, Shakibaei M. Curcumin mediated suppression of nuclear factor-κB promotes chondrogenic differentiation of mesenchymal stem cells in a high-density co-culture microenvironment. *Arthritis Res Ther.* 2010;12(4):R127. doi:10.1186/ar3065. Epub 2010 Jul 1.
36. Yang Q, Wu S, Mao X, Wang W, Tai H. Inhibition effect of curcumin on TNF-α and MMP-13 expression induced by advanced glycation end products in chondrocytes. *Pharmacology.* 2013;91(1–2):77–85. doi:10.1159/000345345. Epub 2012 Nov 26.
37. Aggarwal BB, Gupta SC, Sung B. Curcumin: an orally bioavailable blocker of TNF and other pro-inflammatory biomarkers. *Br J Pharmacol.* 2013 Aug;169(8):1672–1692. doi:10.1111/bph.12131.
38. Mobasheri A, Henrotin Y, Biesalski HK, Shakibaei M. Scientific evidence and rationale for the development of curcumin and resveratrol as nutraceutricals for joint health. *Int J Mol Sci.* 2012;13(4):4202–4232. doi:10.3390/ijms13044202. Epub 2012 Mar 30.
39. Mathy-Hartert M, Jacquemond-Collet I, Priem F, Sanchez C, Lambert C, Henrotin Y. Curcumin inhibits pro-inflammatory mediators and metalloproteinase-3 production by chondrocytes. *Inflamm Res.* 2009 Dec;58(12):899–908. doi:10.1007/s00011-009-0063-1. Epub 2009 Jul 5.
40. Shakibaei M, John T, Schulze-Tanzil G, Lehmann I, Mobasheri A. Suppression of NF-kappaB activation by curcumin leads to inhibition of expression of cyclo-oxygenase-2 and matrix metalloproteinase-9 in human articular chondrocytes: Implications for the treatment of osteoarthritis. *Biochem Pharmacol.* 2007 May 1;73(9):1434–1445. Epub 2007 Jan 7.
41. Henrotin Y, Priem F, Mobasheri A. Curcumin: a new paradigm and therapeutic opportunity for the treatment of osteoarthritis: curcumin for osteoarthritis management. *Springerplus.* 2013 Dec;2(1):56. Epub 2013 Feb 18.
42. Shakibaei M, Mobasheri A, Buhrmann C. Curcumin synergizes with resveratrol to stimulate the MAPK signaling pathway in human articular chondrocytes in vitro. *Genes Nutr.* 2011 May;6(2):171–9. doi:10.1007/s12263-010-0179-5. Epub 2010 May 25.
43. Csaki C, Mobasheri A, Shakibaei M. Synergistic chondroprotective effects of curcumin and resveratrol in human articular chondrocytes: inhibition of IL-1beta-induced NF-kappaB-mediated inflammation and apoptosis. *Arthritis Res Ther.* 2009;11(6):R165. doi:10.1186/ar2850. Epub 2009 Nov 4.
44. Pinsornsak P, Niempoog S. The efficacy of Curcuma Longa L. extract as an adjuvant therapy in primary knee osteoarthritis: a randomized control trial. *J Med Assoc Thai.* 2012 Jan;95 Suppl 1:S51–S58.
45. Kizhakkedath R. Clinical evaluation of a formulation containing Curcuma longa and Boswellia serrata extracts in the management of knee osteoarthritis. *Mol Med Rep.* 2013 Nov;8(5):1542–1548. doi:10.3892/mmr.2013.1661. Epub 2013 Aug 29.
46. Antony B, Merina B, Iyer VS, Judy N, Lennertz K, Joyal S. A pilot cross-over study to evaluate human oral bioavailability of BCM-95CG (Biocurcumax), a novel bioenhanced preparation of curcumin. *Indian J Pharm Sci.* 2008 Jul–Aug;70(4):445–449. doi:10.4103/0250-474X.44591.
47. Sasaki H, Sunagawa Y, Takahashi K, et al. Innovative preparation of curcumin for improved oral bioavailability. *Biol Pharm Bull.* 2011;34(5):660–665.
48. Cuomo J, Appendino G, Dern AS, et al. Comparative absorption of a standardized curcuminoid mixture and its lecithin formulation. *J Nat Prod.* 2011 Apr 25;74(4):664–669. doi:10.1021/np1007262. Epub 2011 Mar 17.
49. Belcaro G, Cesarone MR, Dugall M, et al. Efficacy and safety of Meriva®, a curcumin-phosphatidylcholine complex, during extended administration in osteoarthritis patients. *Altern Med Rev.* 2010 Dec;15(4):337–344.
50. Vishal AA, Mishra A, Raychaudhuri SP. A double blind, randomized, placebo controlled clinical study evaluates the early efficacy of aflapin in subjects with osteoarthritis of knee. *Int J Med Sci.* 2011;8(7):615–622. Epub 2011 Oct 12.
51. Sengupta K, Alluri KV, Satish AR, et al. A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin for treatment of osteoarthritis of the knee. *Arthritis Res Ther.* 2008;10(4):R85. doi:10.1186/ar2461. Epub 2008 Jul 30.
52. Akhtar N, Miller MJ, Haqqi TM. Effect of a Herbal-Leucine mix on the IL-1β-induced cartilage degradation and inflammatory gene expression in human chondrocytes. *BMC Complement Altern Med.* 2011 Aug 19;11:66. doi:10.1186/1472-6882-11-66.
53. Ammon HP. Modulation of the immune system by Boswellia serrata extracts and boswellic acids. *Phytomedicine.* 2010 Sep;17(11):862–867. doi:10.1016/j.phymed.2010.03.003. Epub 2010 Aug 8.
54. Ernst E. Frankincense: systematic review. *BMJ.* 2008 Dec 17;337:a2813. doi:10.1136/bmj.a2813.
55. Davidson RK, Jupp O, de Ferrars R, et al. Sulforaphane represses matrix-degrading proteases and protects cartilage from destruction in vitro and in vivo. *Arthritis Rheum.* Epub 2013 Aug 27. doi:10.1002/art.38133.
56. Facchini A, Stanic I, Cetrullo S, Borzi RM, Filardo G, Flamigni F. Sulforaphane protects human chondrocytes against cell death induced by various stimuli. *J Cell Physiol.* 2011 Jul;226(7):1771–1779. doi:10.1002/jcp.22506.
57. Fragoulis A, Laufs J, Müller S, et al. Sulforaphane has opposing effects on TNF-alpha stimulated and unstimulated synoviocytes. *Arthritis Res Ther.* Epub 2012 Oct 27;14(5):R220.
58. Vlachojannis J, Roufogalis BD, Chrubasik S. Systematic review on the safety of Harpagophytum preparations for osteoarthritic and low back pain. *Phytother Res.* 2008 Feb;22(2):149–152. doi:10.1002/ptr.2314.
59. Fiebich BL, Muñoz E, Rose T, Weiss G, McGregor GP. Molecular targets of the antiinflammatory Harpagophytum procumbens (devil's claw): inhibition of TNFα and COX-2 gene expression by preventing activation of AP-1. *Phytother Res.* 2012 Jun;26(6):806–811. doi:10.1002/ptr.3636. Epub 2011 Nov 10.
60. Gagnier JJ, Chrubasik S, Manheimer E. Harpgophytum procumbens for osteoarthritis and low back pain: a systematic review. *BMC Complement Altern Med.* 2004 Sep 15;4:13.
61. Huang TH, Tran VH, Duke RK, Tan S, Chrubasik S, Roufogalis BD, Duke CC. Harpagoside suppresses lipopolysaccharide-induced iNOS and COX-2 expression through inhibition of NF-kappa B activation. *J Ethnopharmacol.* 2006 Mar 8;104(1–2):149–155. Epub 2005 Oct 3.
62. Chopra A, Saluja M, Tillu G, et al. Ayurvedic medicine offers a good alternative to glucosamine and celecoxib in the treatment of symptomatic knee osteoarthritis: a randomized, double-blind, controlled equivalence drug trial. *Rheumatology (Oxford).* 2013 Aug;52(8):1408–17. doi:10.1093/rheumatology/kes414. Epub 2013 Jan 30.
63. Liu H, Zeng C, Gao SG, Yang T, Luo W, Li YS, Xiong YL, Sun JP, Lei GH. The effect of mud therapy on pain relief in patients with knee osteoarthritis: A meta-analysis of randomized controlled trials. *J Int Med Res.* 2013 Oct;41(5):1418–1425. doi:10.1177/0300060513488509. Epub 2013 Sep 5.
64. Fraioli A, Serio A, Mennuni G, et al. A study on the efficacy of treatment with mud packs and baths with Sillene mineral water (Chianciano Spa Italy) in patients suffering from knee osteoarthritis. *Rheumatol Int.* 2011 Oct;31(10):1333–1340. doi:10.1007/s00296-010-1475-5.
65. Bostan B, Sen U, Güneş T, Sahin SA, Sen C, Erdem M, Erkorkmaz U. Comparison of intra-articular hyaluronic acid injections and mud-pack therapy in the treatment of knee osteoarthritis. *Acta Orthop Traumatol Turc.* 2010;44(1):42–47. doi:10.3944/AOTT.2010.2238.
66. Kiliçoğlu O, Dönmez A, Karagülle Z, Erdoğan N, Akalan E, Temelli Y. Effect of balneotherapy on temporospatial gait characteristics of patients with osteoarthritis of the knee. *Rheumatol Int.* 2010 Apr;30(6):739–747. doi:10.1007/s00296-009-1054-9. Epub 2009 Jul 9.
67. Evcik D, Kavuncu V, Yeter A, Yigit I. The efficacy of balneotherapy and mud-pack therapy in patients with knee osteoarthritis. *Joint Bone Spine.* 2007 Jan;74(1):60–65. Epub 2006 Nov 29.
68. McAlindon TE, Felson DT, Zhang Y, et al. Relation of dietary intake and serum levels of vitamin D to progression of osteoarthritis of the knee among participants in the Framingham Study. *Ann Intern Med.* 1996 Sep 1;125(5):353–359.
69. Sanghi D, Mishra A, Sharma AC, et al. Does vitamin D improve osteoarthritis of the knee: a randomized controlled pilot trial. *Clin Orthop Relat Res.* 2013 Nov;471(11):3556–3562. doi:10.1007/s11999-013-3201-6. Epub 2013 Aug 1.
70. McAlindon T, LaValley M, Schneider E, et al. Effect of vitamin D supplementation on progression of knee pain and cartilage volume loss in patients with symptomatic osteoarthritis: a randomized controlled trial. *JAMA.* 2013 Jan 9;309(2):155–162. doi:10.1001/jama.2012.164487.
71. Wann AK, Mistry J, Blain EJ, Michael-Titus AT, Knight MM. Eicosapentaenoic acid and docosahexaenoic acid reduce interleukin-1β-mediated cartilage degradation. *Arthritis Res Ther.* 2010;12(6):R207. doi:10.1186/ar3183. Epub 2010 Nov 8.
72. Knott L, Avery NC, Hollander AP, Tarlton JF. Regulation of osteoarthritis by omega-3 (n-3) polyunsaturated fatty acids in a naturally occurring model of disease. *Osteoarthritis Cartilage.* 2011 Sep;19(9):1150–1157. doi:10.1016/j.joca.2011.06.005. Epub 2011 Jul 1.
73. Baker KR, Matthan NR, Lichtenstein AH, et al. Association of plasma n-6 and n-3 polyunsaturated fatty acids with synovitis in the knee: the MOST study. *Osteoarthritis Cartilage.* 2012 May;20(5):382–7. doi:10.1016/j.joca.2012.01.021. Epub 2012 Feb 4.
74. Cleland LG, James MJ. Osteoarthritis. Omega-3 fatty acids and synovitis in osteoarthritic knees. *Nat Rev Rheumatol.* 2012 Apr 17;8(6):314–315. doi:10.1038/nrrheum.2012.60.
75. Henrotin Y, Lambert C. Chondroitin and glucosamine in the management of osteoarthritis: an update. *Curr Rheumatol Rep.* 2013 Oct;15(10):361. doi:10.1007/s11926-013-0361-z.
76. Bertin P, Taieb C. NSAID-sparing effect of glucosamine hydrochloride (Structoflex®) in patients with knee osteoarthritis: an analysis of data from a French database. *Curr Med Res Opin.* Epub 2013 Oct 16.
77. Cerda C, Bruguera M, Parés A. Hepatotoxicity associated with glucosamine and chondroitin sulfate in patients with chronic liver disease. *World J Gastroenterol.* 2013 Aug 28;19(32):5381–5384. doi:10.3748/wjg.v19.i32.5381.
78. Howard D, Shepherd JH, Kew SJ, et al. Release of growth factors from a reinforced collagen GAG matrix supplemented with platelet rich plasma: Influence on cultured human meniscal cells. *J Orthop Res.* Epub 2013 Oct 7. doi:10.1002/jor.22495.
79. Andia I, Maffulli N. Platelet-rich plasma for managing pain and inflammation in osteoarthritis. *Nat Rev Rheumatol.* Epub 2013 Oct 1. doi:10.1038/nrrheum.2013.141.
80. Zhu Y, Yuan M, Meng HY, et al. Basic science and clinical application of platelet-rich plasma for cartilage defects and osteoarthritis: a review. *Osteoarthritis Cartilage.* 2013 Nov;21(11):1627–1637. doi:10.1016/j.joca.2013.07.017. Epub 2013 Aug 7.
81. Say F, Gurler D, Yener K, Bulbul M, Malkoc M. Platelet-rich plasma injection is more effective than hyaluronic acid in the treatment of knee osteoarthritis. *Acta Chir Orthop Traumatol Cech.* 2013;80(4):278–283.
82. Vaquerizo V, Plasencia MÁ, Arribas I, et al. Comparison of intra-articular injections of plasma rich in growth factors (PRGF-Endoret) versus durolane hyaluronic acid in the treatment of patients with symptomatic osteoarthritis: a randomized controlled trial. *Arthroscopy.* 2013 Oct;29(10):1635–1643. doi:10.1016/j.arthro.2013.07.264.
83. Qin B, Shi X, Samai PS, Renner JB, Jordan JM, He K. Association of dietary magnesium intake with radiographic knee osteoarthritis: results from a population-based study. *Arthritis Care Res (Hoboken).* 2012 Sep;64(9):1306–1311. doi:10.1002/acr.21708.
84. Oka H, Akune T, Muraki S, et al. Association of low dietary vitamin K intake with radiographic knee osteoarthritis in the Japanese elderly population: dietary survey in a population-based cohort of the ROAD study. *J Orthop Sci.* 2009 Nov;14(6):687–692. doi:10.1007/s00776-009-1395-y. Epub 2009 Dec 8.
85. Lu B, Ahmad O, Zhang FF, et al. Soft drink intake and progression of radiographic knee osteoarthritis: data from the osteoarthritis initiative. *BMJ Open.* 2013 Jul 19;3(7). pii: e002993. doi:10.1136/bmjopen-2013-002993. Print 2013.

◆

PRESCRIPT-ASSIST™

broad spectrum probiotic & prebiotic

The clinically proven
(in a double-blind, placebo-controlled trial)

broad-spectrum
(providing 29 strains of beneficial microorganisms)

shelf-stable
(retaining 95% viability 2 years after date of manufacture)

acid-resistant
(encased in hard spores that protect against stomach acid)

prebiotic-enhanced
(providing a reliable food source)

next-generation probiotic supplement.
(reliably delivering results for your patients)

For product literature, study manuscripts, free product samples — or to order Prescript-Assist today — call 888-919-8943 or visit www.prescript-assist.com

Most probiotic supplements are plagued with problems. For starters, they've never been tested in human clinical trials. They typically feature just a few strains of lactic acid based microflora, limiting their efficacy. They're easily destroyed by heat, pressure, light, and stomach acid. And they lack prebiotics — the food probiotics need to proliferate.

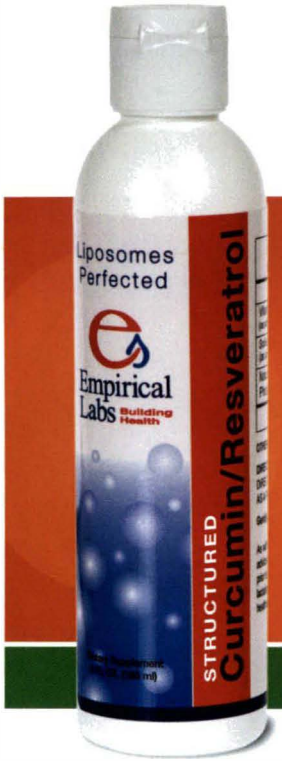
Prescript-Assist is different. The subject of multiple human clinical studies, Prescript-Assist solves all these problems. Which is why it has been shown to consistently provide positive patient outcomes.*

Available through healthcare professionals.

**This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.*

Distributed by LL Magnetic Clay, Inc. • Livermore, CA 94550

Structured Curcumin/ Resveratrol CST™

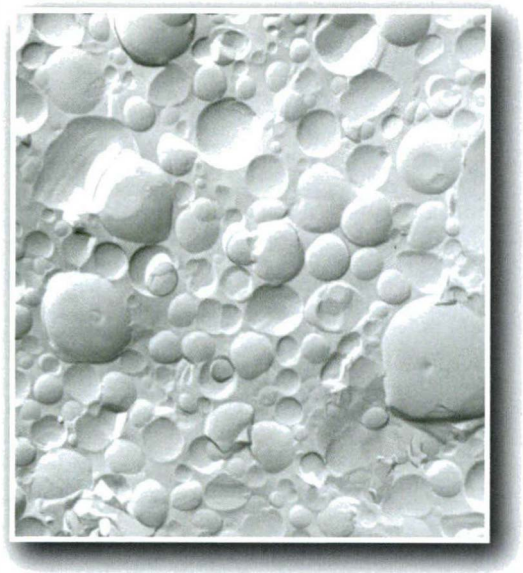


Maximize Curcumin and Resveratrol Strength with CST™-Cold Structured Technology

Non hydrogenated • Tested GMO free • Stable liposomes

866-948-8135 • Empirical-Labs.com

Curcumin - 150 mg
Resveratrol - 150 mg
30 servings



A scanning electron micrograph of Empirical Labs' highly structured liposomes—three dimensional, spherical. Average diameter = 200 nanometers.

Your patients trust you for quality. They will thank you for the results.

Verified liposomal delivery system
We are the manufacturer

- Non hydrogenated
- Tested GMO free
- Structured, stable liposomes
- Provides natural PC (phosphatidyl choline)
- Alcohol free
- Prove it to yourself—see product comparisons and brief video at empirical-labs.com

Empirical Labs
Building Health

Call us at 866-948-8135 — We answer our phone!
Empirical-Labs.com • Orders@Empirical-Labs.com

Overcoming Gender Disparity in Adolescent Mental Health: Utilizing Safe and Natural Therapies to Treat Teenage Girls

by Kellie Raydon, ND, MSOM

Psychological development during adolescence presents challenges to both genders; however, adolescent girls experience mood disorders more frequently than their male counterparts. Before puberty, the prevalence of mood disorders diagnosed among boys and girls is equal, yet by midadolescence girls are twice as likely as boys to be diagnosed with mood disorders.[1] A recent report from National Surveys on Drug Use and Health revealed specifically that depression triples for girls as they enter adolescence between the ages of 10 and 15.[2] Researchers at Yale University reported that 56% of the 10- to 14-year-old girls they interviewed reported engaging in nonsuicidal self injury (also known as "cutting") at some point in their lifetimes, including 36% in the past year.[3]

Why is there such a gender disparity in mental health during adolescence? Some suggest that girls at menarche begin to tune in more acutely to emotional stimuli in order to be able to nurture babies and respond to their emotional cues. Differences in estrogen and testosterone result in vast differences in brain development and behavior for boys and girls, which can be observed in infancy. Baby girls make eye contact and read faces much more than baby boys do. In one study, 12-month-old girls looked at their mothers' faces for signs of approval or disapproval 10 to 20 times more than baby boys.[4] Estrogen enhances skills of communication, observation, and intuition. It drives women toward developing relationships, being more emotionally connected to others, and a preference to avoid conflict. Oxytocin furthers that drive for connection, bonding and nurturing, and for females this feeling of connection reduces stress.

In our modern world, where teenage girls are in an often hostile cultural and social environment, we can see how an increase in sensitivity to emotional stimuli in addition to an innate longing for connection and approval during this phase could result in challenges to mental health if not appropriately addressed. Girls are bombarded with messages from the media and our culture that tell them their value lies in their physical beauty, and they are often in peer groups where other girls engage in damaging passive-aggressive behavior (the so-called *mean girl* phenomenon). This can be incredibly painful and detrimental to the mental and emotional health of a girl who is experiencing an increased sensitivity to emotional stimuli due to her newly cycling hormones as an adolescent.

For health-care providers to this population, it is crucial to know how to identify mood disorders, and determine biological and social influences, in order to develop effective treatment approaches. In some extreme cases, it may be necessary to make a referral to a specialist or inpatient facility, in which case it is still important to be able to integrate management of care.

Too often a dysthymic or clinically depressed adolescent girl is dismissed as being *moody* by her family, or her anxiety is labeled as *teen angst*. She may simply be called *Type A* or *tightly wound*. Consequently, she may not get the treatment that she needs and thereby risk moving into her adult years with anxiety or a mood disorder. The vast majority of teens who suffer from anxiety and depression don't get treatment. One survey showed that among adolescents with mental health needs, 70% did not receive any treatment.[5]

There are a myriad of reasons why adolescents are not getting their mental-health-care needs met, including lack of access to services, lack of parental support, personal resistance to receiving or complying with treatment, and lack of appropriate screening and diagnosis. In particular, even if an adolescent has health insurance, mental health services are often limited or excluded. Sometimes a teenage girl or her parents forgo seeking mental health care because they fear the consequences that a potential diagnosis would carry for the rest of her life.

On the other end of the spectrum, when adolescents do receive treatment, they are often given the

➤

➤

same treatment as adults. This is problematic for several reasons; primarily, it is not developmentally appropriate. We have seen a dramatic increase in the use of adult psychiatric drugs in children and adolescents. In the *Archives of General Psychiatry*, a comparison between the years 1993–1998 and 2005–2009 demonstrated a fivefold increase in prescriptions of antipsychotic drugs for adolescents (14–20 years old).[6]

Ultimately, what is happening for adolescent girls is a mental health crisis of epic proportions. They are experiencing mental health issues with far greater frequency than boys their age. Most of them aren't getting the treatment that they need, and when they are treated, it is primarily with adult psychiatric drugs. This is due in part to the pharmaceutical industry's launching a highly effective multimillion-dollar advertising campaign to the medical community and the American public. The industry regards its medications as the most advanced, safe, and effective way to treat mental illness.

Using Psychiatric Drugs in the Treatment of Adolescent Girls: Dilemmas and Controversies

There are far-reaching consequences of teaching young people to think of their psychological challenges in strictly biochemical terms. Over the past three decades, the normalization of using psychiatric drugs has shifted our culture from viewing emotional problems as a product of personal developmental psychology to one that contextualizes negative thoughts and emotions as a chemical imbalance. The acceptance of mental illness as a biochemical problem has been celebrated as removing the stigma and providing a treatment in the form of a pill.

Adolescent girls are readily prescribed pharmaceutical drugs and pathologized for their psychological issues, even when they may not be suffering at all from a biochemical disorder. As a result, they are discouraged from exploring and examining the roots of their feelings and developing life skills that will help them to navigate their emotions and cope with our culture more effectively for the rest of their lives.

Unfortunately, the efficacy of pharmaceutical treatments is unimpressive, and the known side effects and potential adverse reactions are terrifying. According to a literature review in 2013 in the *Journal of Neuropsychiatric Disease and Treatment*, approximately 30% to 40% of patients with major depression have only a partial response to available pharmacological and psychotherapeutic interventions.[7] Highly publicized concerns regarding the risk of suicide have given us all a reason to pause and exercise extreme caution in prescribing these drugs. Concerns about the use of psychiatric drugs in children and adolescents reached a climax about a decade ago, when public health officials in the US, Britain, France, and Canada issued warnings that a popular SSRI, paroxetine (Paxil), could increase the risk of hostility, mood swings, aggression, and suicide in children and adolescents.[8] Furthermore, a 2012 study of the use of SSRIs versus cognitive behavioral therapy (CBT) in adolescents concluded that "the risk-benefit profile over a 5-year period, CBT offers a safer profile than combination treatment or SSRIs alone with respect to suicide deaths and attempts. Any additional benefits of SSRIs, either alone or in combination with CBT, must be weighed against the expected increase in suicides."[9]

We can no longer afford to disregard the body of literature that continues to emerge, which implicates the use of psychiatric medications in countless suicides and other acts of violence, including murder. Because these drugs can cause dissociative reactions, making adolescents who take them unable to connect with the consequences of their behavior, we should exercise extreme caution in prescribing them. We know that the frontal lobe, which is responsible for higher reasoning, problem-solving, and the ability to predict future consequences, is still developing through the late teens and early 20s. We can see the danger inherent in administering a drug to a teenage girl, since her frontal lobe is still developing, and her ability to make good decisions and choices could be compromised even further by an SSRI. A teenage girl who is already using poor judgment, as many teenagers do, may exhibit increased detachment to outcomes, leading to greater risk to her safety and well-being under the influence of these drugs.

Another concern about the use of SSRIs in adolescents is that they inhibit sexual desire and sexual functioning. Developmental psychologists have made us aware of the way in which sexuality drives psychological development and our connection with other people. If we are administering medications that inhibit sexual functioning, especially during adolescence, when sexual development is beginning to emerge, there is great concern about the far-reaching effects that this may have on a young woman's ability to develop authentic intimacy and fully express herself in healthy sexual relationships.

Furthermore, withdrawing from these substances has to be carefully managed and is often extremely uncomfortable. Dr. Jonathan E. Prousky articulated the withdrawal symptoms for the various classes of psychiatric drugs and proposed medication tapering protocols in his article "What to Do When Patients Wish to Discontinue Their Psychotropic Medications? Effective Tapering Strategies to Limit Drug Withdrawal and Destabilization: a Clinician's Perspective" in the February 2013 issue of the *Townsend Letter*.[10] With adolescent girls who live at home and are enrolled in school, it is helpful to have parents and teachers alert to possible withdrawal side effects so that intervention and management of unpleasant symptoms happen swiftly.

Safer and More Natural Treatments Have Proved to Be Effective

Fortunately, there are many nonpharmaceutical interventions that are effective in treating mild to moderate depression and anxiety in teenage girls, which should be considered when appropriate. Even when it is indicated for an adolescent girl to use pharmaceutical drugs to help manage her condition, using an integrative approach can increase the efficacy of the treatment and potentially reduce the duration of the pharmaceutical intervention.

Using acupuncture and Chinese medicine in addressing adolescent girls' mental health can create deep and lasting positive changes. Many studies demonstrate the benefits of acupuncture in the treatment of anxiety, depression, and addictive behaviors. One such study, which compared the brainwaves of anxiety patients on clonazepam with patients receiving acupuncture, demonstrated that acupuncture not only relieved anxiety faster but also was more effective in resolving anxiety.[11]

Another benefit of using a Chinese medical approach is that the mind, body, and spirit are not viewed as separate. A pattern that exhibits itself as what is defined in Western medical terms as depression or anxiety is delineated in more specific, individualized patterns such as *Liver qi constraint* or *spleen qi deficiency*, which tends to feel like less of a stigma to a girl.

There are conventional medical journals that highlight the efficacy and legitimacy of the use of natural medicine in the treatment of psychiatric disease. In the May 2013 issue of *Journal of Neuropsychiatric Disease and Treatment,* a literature review stated the following:

> Evidence-based data suggest that light therapy, St John's Wort, Rhodiola Rosea, omega-3 fatty acids, yoga, acupuncture, mindfulness therapies, exercise, sleep deprivation, and S-adenosylmethionine (SAMe) are effective in the treatment of mood disorders. Choline, inositol, 5-hydroxy-L-tryptophan, and N-acetylcysteine are effective in bipolar patients in conjunction with conventional treatment. DHEA is effective both in bipolar depression and depression in the setting of comorbid physical disease, although doses should be titrated to avoid adverse effects.[12]

In addition, according to the literature review, studies support the use of omega-3 fatty acids, EPA, and DHA in the treatment of unipolar and bipolar depression, and demonstrate that higher doses may be required in patients with resistant bipolar depression who experience rapid cycling.

These orthomolecular therapies are a mainstay in my practice for both the treatment of mood disorders and also as integrative support during the process of tapering off of psychotropic drugs. I use rhodiola, St. John's Wort, L-tryptophan, or 5-HTP for serotonin support to help manage symptoms of depression, and GABA, L-theanine, *Melissa*, or Lavela WS 1265 (lavender oil) to support a girl experiencing anxiety. I have found these natural therapies to be incredibly beneficial to a girl while she receives cognitive behavioral therapy (CBT), exploring the source of her feelings and developing coping strategies with a skilled therapist. Modalities such as acupuncture and homeopathy, because they are also working on the quantum physical level, allow me to provide a highly individualized approach in treating teenage girls.

In addition to supporting mental health with nutrients, botanical medicines, amino acids, acupuncture, and homeopathy, we need to consider the unique needs of female adolescent development and make clinical decisions and treatment plans with acknowledgement of the neuroendocrinological difference in girls.

For example, since we are aware of teenage girls' innate drive to connect with others, we can encourage and facilitate groups wherein they can connect with other girls. I have facilitated groups for adolescent girls wherein they have an opportunity to connect with each other and express their thoughts and feelings about issues related to media and body image, emerging sexuality, and more. Helping a girl develop a critical thought process around messages in the media and other messages that she encounters in our culture is a powerful preventative approach, which can provide her a useful filter and greater resiliency.

It is ideal to start early, even before menarche, to help girls understand the difference in how the hormones most prevalent during the first half of the menstrual cycle differ from those during the second half and how that difference can influence our mood. For example, I educate girls about the inherent biological predisposition to want to go out and socialize around the time of ovulation (yang) and conversely the biological predisposition to be more introverted (yin), and potentially more emotionally sensitive, during the time leading up to menstruation. I encourage each girl to aspire to embrace the flow of yin and yang energy throughout her cycle, setting aside time to be more externally focused during ovulation and setting aside time to write poetry or music and to reflect and connect deeply to her thoughts and feelings around menstruation. Helping her cultivate this type of self-awareness related

➤

➤

to the cycling of her hormones and neurotransmitters reinforces to her that the ebbing and flowing of her sensitivity to emotional stimuli is part of a normal physiologic process.

Parents, teachers, care providers, and girls themselves often struggle with determining the difference between normal teenage mood swings and possible mental illness. Many of us dislike and fear the idea that diagnosis may result in the prescribing of psychiatric drugs. Just because we don't like the most widely accepted treatments does not mean that a problem does not exist. Counseling for the adolescent girl and her family is often a reasonable place to start. Psychosocial interventions that help to change personal or family dynamics may be effective, depending on the nature of the issue.

The two types of depression that commonly present in adolescent girls are major depression and dysthymia. Major depression lasts two weeks and can occur more than once during childhood and adolescence. It can occur after a traumatic event, such as death of a loved one, or abuse. Dysthymia is less severe than major depression, but it is more chronic, lasting for two years.

About half of girls diagnosed with any form of depression are also diagnosed with an anxiety disorder. Girls diagnosed with anxiety disorder in childhood are more likely to become depressed as teens. This is why it is important that awareness and mental health screening for girls begin in pediatrics in an effort to prevent an anxious girl from becoming an older teen with depression.

The US Preventative Services Task Force recommends that primary care providers screen adolescents for depression annually between ages 12 and 18 in routine office visits. There are several screening tools that physicians can utilize in the clinical setting, as well as screening tools and rating scales that can be used by parents, teachers, or the girl herself to evaluate her mental health. The University of Massachusetts Department of Psychiatry website provides a useful table of all the screening tools and rating scales that have been developed for adolescent mental health.[13] It is important to note that these tools do not provide a diagnosis, but rather guide the practitioner, parent, teacher, or teen toward determining if particular mental health disorders might be worth considering as a cause for the adolescent's behavioral or emotional struggle. Also, if an adolescent girl is given a diagnosis and a treatment plan is in place, some of these tools are useful in measuring the progress and efficacy of her treatment.

A particular score on these scales does not mean that a child has a disorder, and it is imperative that a full diagnostic workup, including clinical physical diagnosis, laboratory workup, and psychiatric evaluation, is included before an adolescent is given a diagnosis of a disorder. To be given a diagnosis of a disorder should not be taken lightly. I have been surprised by the way in which these diagnoses are often cavalierly given by health-care providers, without the input of a specialist or full diagnostic workup. I have seen patients in their 40s who are taking antidepressants that they were prescribed in their 20s and have been refilled annually by a primary care provider without thorough and complete evaluation or follow-up regarding the diagnosis of depression. In fact, no one had even suggested the possibility that the medication would ever be discontinued.

A full social history is critical in the assessment of a girl's mental health, including her performance at school, relationships with peers, dating history, sexual history, how well she sleeps, amount of screen time (time spent using social media such as Facebook, Twitter, and Instagram), her activity level, sibling dynamics, as well as the relationship with parents, stepparents, and other influential family members. Some of the ways that mood disorders present in adolescent girls include withdrawing from friends, activities, or family; difficulty sleeping or concentrating; falling grades; getting in trouble at school; truancy; increased or decreased appetite; feeling irritable or angry; feeling restless; frequent sadness; crying or mood swings; and low self-esteem.

Nutritional evaluation for girls is extremely important in supporting their mental health. In my practice, I pay close attention to caloric intake with an emphasis on daily consumption of sugar and caffeine, as well as protein and fat intake. In cases of suspected eating disorder, it is important to act promptly and refer to a specialist. In addition, getting an accurate and complete family history is important, since girls with depressed parents are more likely to experience depression. At any point during the evaluation, if the adolescent girl expresses thoughts of harming herself or others, immediate intervention is required by a mental health practitioner with experience in managing adolescents in crisis.

In my practice, after a comprehensive intake and workup have been completed, I determine the severity of the mental health issues that a teenage girl is experiencing. At that point, I may refer to a specialist for further psychological evaluation and ongoing management. I will integrate management of her care throughout the process so that she receives a comprehensive, holistic treatment plan. If I determine that she has a mood disorder or anxiety that is mild to moderate, I believe that it is appropriate to initiate a less aggressive treatment approach, utilizing minimally invasive treatments and natural medicines.

In some cases, adolescent girls have been prescribed pharmaceutical medicines that they have not yet taken because they are worried about the dangerous side effects. For example, in my practice I treated a 15-year-old female with a history of panic attacks. Her anxiety started increasing after her parents got divorced, then over the following two years the anxiety

escalated to panic attacks. Her mother wanted a treatment alternative to the Zoloft prescription that was given by her pediatrician. The mother was concerned about the potential side effects of Zoloft and also was afraid of her daughter's becoming dependent on pharmaceutical drugs to manage her mental health. In addition to recommending family counseling, as well as individual counseling, I started providing her weekly acupuncture treatments for 10 weeks. Such weekly treatments are not only effective in treating anxiety but also provide for frequent reassessment of progress and an opportunity to revise and evolve the treatment plan if needed. I also prescribed a high-potency fish oil supplement and the use of Lavela WS 1265 as needed for anxiety. Lavela WS 1265, made by Integrative Therapeutics, is nonsedating and non-habit-forming and is supported by clinical trials to be effective in the treatment of anxiety disorder.[14] Treatment has been highly effective, demonstrated by the patient's absence of panic attacks. She is also developing greater emotional literacy with her counselor in CBT and she feels that she has more agency in her family.

It is not uncommon for an adolescent girl to already be taking one or more psychiatric drugs when she initiates care with me. In these cases, it is ideal to have a working relationship and excellent communication with the prescribing doctor to integrate the management of care throughout the treatment and especially if the patient decides to taper off the drug. I have great success in using acupuncture, homeopathy, flower essences, guided imagery, botanical medicines, nutritional counseling, and amino acid therapy to prevent unwanted withdrawal side effects.

Although in some ways the outlook for adolescent girls' mental health care looks grim, we are making a difference by identifying mood disorders in teenage girls, getting them appropriately treated, and helping them not to become dependent on potentially dangerous and habit-forming pharmaceuticals. We need to raise awareness about the availability and legitimacy of the safe and effective natural medicines that can treat anxiety and mood disorders. In addition, we must strive to create a more nurturing social and cultural environment for girls who have heightened emotional sensitivity, and serve as teachers, healers, and guides for them along their journey toward womanhood. We can help them to have compassion for themselves and other girls, and we can help parents feel empowered and optimistic about meeting their needs as well.

Notes

1. Steingard RJ. Mood disorders and teenage girls: why they are more vulnerable than boys, and what signs and symptoms you should look for [online article]. Child Mind Institute. http://www.childmind.org/en/posts/articles/mood-disorders-teenage-girls-anxiety-depression.
2. Adults with both mental illness and substance use disorder in 2011 [Web page]. Substance Abuse and Mental Health Services Administration. http://www.samhsa.gov/data.
3. Hilt L. Nonsuicidal self-injury in young adolescent girls: Moderators of the distress-function relationship. Journal of Consulting and Clinical Psychology, Vol 76(1), Feb 2008, 63-71.
4. Obrien G. Understanding ourselves: gender differences in the brain [online article]. Columbia Consultancy. 2007. http://www.columbiaconsult.com/pubs/v52_fall07.html. Accessed 11/8/13.
5. Chandra A, Minkovitz CS. Stigma starts early: gender differences in teen willingness to use mental health services. *J Adolesc Health* 2006;38:754e.1–754e8.
6. Olfson, M. National trends in the office-based treatment of children, adolescents, and adults with antipsychotics. *Arch Gen Psychiatry*. 2012;69(12):1247–1256.
7. Qureshi NA, Al-Bedah AM. Mood disorders and complementary and alternative medicine: a literature review. *J Neuropsychiatr Dis Treat*. May 2013;2013(9):639–658.
8. Should children take antidepressants? *Harvard Mental Health Letter*. December 2003. Available at http://www.health.harvard.edu/newsweek/Should_children_take_antidepressants.htm.
9. Soetman, DI. Modeling the risks and benefits of depression treatment for children and young adults. *Value Health*. 2012 Jul–Aug;15(5):724–729. doi: 10.1016/j.jval.2012.03.1390. Epub 2012 Jun 8.
10. Prousky JE. What to do when patients wish to discontinue their psychotropic medications? effective tapering strategies to limit drug withdrawal and destabilization: a clinician's perspective. *Townsend Lett*. February/March 2013.
11. Zhou, XF. Impacts of acupuncture at twelve meridians acupoints on brain waves of patients with general anxiety disorder. *Chinese Acupuncture and Moxibustion*. 2013 May;33(5):395–398.
12. Qureshi and Al-Bedah. Op cit.
13. Table of all screening tools & rating scales [Web page]. Massachusetts General Hospital School Psychiatry Program & Madi Resource Center. http://www2.massgeneral.org/schoolpsychiatry/screeningtools_table.asp.
14. Kasper, S. Silexan, an orally administered Lavandula oil preparation, is effective in the treatment of 'subsyndromal' anxiety disorder: a randomized, double-blind, placebo controlled trial. *Int Clin Psychopharmacol*. 2010 Sep;25(5):277–287. doi:10.1097/YIC.0b013e32833b3242.

◆

Gender Disparity

Dr. Raydon earned a doctorate in naturopathic medicine and a master of science in Oriental medicine from the National College of Natural Medicine. She completed a residency in integrative women's health. Her master's thesis focused on the adolescent development of girls, and she has extensive experience in mentoring teenage girls in the community, which is one of her greatest passions. Dr. Raydon practices integrative family medicine, including adolescent medicine, with an emphasis on women's health at A Woman's Time, and Urban Wellness Group in Portland, Oregon. She uses a multidisciplinary approach tailored to the individual, which includes lifestyle counseling, Chinese and western botanical medicine, acupuncture, homeopathy, and nutrient supplementation.

Metformin and L-Carnitine in Thyroid Hormone Suppression Therapy

by Jacob Schor, ND, FABNO

There is a decent chance that the prescription drug metformin, commonly used to treat diabetes, may prove useful in the long-term treatment of thyroid cancer. Several papers report that metformin suppresses the production of thyroid stimulating hormone (TSH). By doing so, metformin may be a useful addition to the TSH suppression therapy aimed at preventing thyroid cancer recurrence. The amino acid L-carnitine may also have utility by reducing the discomforts that these patients experience resulting from treatment. TSH suppression, typically achieved by taking excessive doses of thyroid hormone, has for many years been a common, though debated, treatment for thyroid cancer.

Approximately 60,220 new cases of thyroid cancer were diagnosed in the US in 2013 and about 1850 deaths resulted from thyroid cancer.[1]

Most of those people diagnosed will undergo thyroidectomy, a surgery to remove their thyroid gland. Many of these patients will then have any remaining thyroid tissue destroyed with oral doses of radioactive iodine. All of these people will end up taking supplemental thyroid hormone for life. Many of these people, particularly those with more aggressive cancers, will be prescribed thyroid hormone at doses high enough to suppress nearly all TSH production.

TSH-suppressive doses of thyroid hormone are also used in treating of benign thyroid nodules. Although this treatment has not been proved effective for this condition and is becoming increasingly controversial, " ... approximately half of endocrinologists recently surveyed in Europe and North America indicated that they would use TSH-suppressive therapy in the management of typical cases of benign nodular thyroid."[2]

There are also some practitioners who suggest TSH suppression in the treatment of malignant melanoma. This idea is in response to two reports from researchers at M. D. Anderson. In August 2004, a paper by Ellerhost et al. reported that melanoma cells were sensitive to thyrotopin-releasing hormone, the hormone that stimulates TSH production.[3] In a 2006 paper, Ellerhost focused on TSH instead and concluded, "Taken together, these data support the hypothesis that TSH is a growth factor for human melanoma."[4]

In a certain instances, specific cancers respond to the same stimuli that regulate the tissue from which they originated. Breast cancer responds to estrogen. Prostate cancer responds to testosterone. These hormones stimulate these cancers to grow faster. Thyroid cancer is one of these cancers that respond to specific regulating hormones made in the body. Thyroid cancer, to no one's great surprise, is stimulated by TSH, just as healthy thyroid tissue is.

Many thyroid cancers contain membrane receptors for TSH. When stimulated by TSH, these tumors take-up radioactive iodine faster, secrete more thyroglobulin, grow in size, and show signs of progression. Thus it has become common therapy to give patients with thyroid cancer enough thyroid hormone to lower their TSH into a range typically seen with hyperthyroid disease. The rationale for doing this is simple enough. The cost is minimal, the side effects are not overly serious, and logically it should reduce disease recurrence.[5]

That was the rationale at least in 1991. This practice, it turns out, is not totally without side effects. In a June 2012 report, slightly over 10% of patients receiving suppressive doses of thyroid developed atrial fibrillation.[6]

TSH suppression may also negatively affect bone density. Studies have varied, but the consensus is that TSH suppression will lead to decreased bone density in postmenopausal women.[7,8] Still, this may not be that big a deal. A 2011 paper that reviewed the long-term consequences concluded:

> There are many studies on the potential harmful effects of suppressive therapy on various organs and systems with discrepant results. However, there is no scientific evidence that the clinical impact of these effects is significant.[9]

Perhaps a greater concern than side effects is that the actual benefit of being on TSH suppression therapy for many patients is not clear, at least

for those at low risk of recurrence. A 2005 paper reported no improvement in those with low-risk cancer, and suggested, "Only selected patients with high-risk papillary and follicular thyroid cancer require long-term TSH-suppressive doses. ... In these patients, careful monitoring is necessary to avoid undesirable effects on bone and heart."[10]

A 2010 paper found negligible benefit as well when measuring impact. Disease free survival (DFS) " ... for patients without TSH suppression was not inferior by more than 10% to DFS for patients with TSH suppression. Thyroid-conserving surgery without TSH suppression should be considered for patients with low-risk PTC [papillary thyroid carcinoma] to avoid potential adverse effects of TSH suppression."[11]

These days there is a fair bit of talk in the journals about risk versus benefit in deciding whether a patient should be put on long-term TSH suppression.

> More aggressive TSH suppression is now suggested for patients with high-risk disease or recurrent tumor, whereas less aggressive TSH suppression is reasonable in low-risk patients. Cancer risk should be individualized and balanced against the potential for adverse effects. In patients with an intermediate risk for thyroid cancer recurrence and a high risk of adverse effects of therapy, the degree of TSH suppression should be reevaluated during the follow-up period. Normalization of serum TSH is advisable for long-term treatment of disease-free elderly patients with [differentiated thyroid cancer] ... and significant comorbidities. ...[12]

In this same 2012 paper, Bernadette Biondi et al. go so far as to define nine potential patient categories varying with disease risk and side-effect potential, each with differing TSH targets for both initial and long-term L-T4 therapy. The higher the risk or recurrence of an aggressive tumor, the lower target TSH is suggested.

Whether or not this is a useful treatment in all situations, there are still a great many patients being treated with TSH-suppressive doses of thyroid. Though this treatment may not be as dangerous as once thought, few patients like it. To achieve TSH suppression necessitates doses of thyroid hormone that make patients feel subjectively as if they were hyperthyroid. They come in to the office and " ... complain of symptoms such as anxiety, heat intolerance, tremors, sweaty skin, insomnia, forgetfulness, or mood disorders."[13]

It is in this clinical situation that a number of recent papers on metformin are so interesting. Metformin, it turns out, appears to lower TSH without changing thyroid hormone levels.

In 2006, Vigersky et al. from the Walter Reed Army Hospital reported this effect on TSH and were the first to suggest that " ... metformin's ability to suppress TSH without causing clinical or chemical hyperthyroidism might render this drug a useful adjunct to the treatment of patients with thyroid cancer."[14]

Isidro et al confirmed this TSH-lowering effect in August 2007 " ... in obese, diabetic patients with primary hypothyroidism."[15] Capelli et al. reported similar findings in 2009, this time in hypothyroid diabetics.[16] Rotundi found a similar TSH-lowering effect in women treated for polycystic ovarian syndrome (PCOS) and reported it in 2011. The only thyroid parameter that changes with addition of metformin is TSH decreasing. There are no changes in free T4 level.[17]

Two large retrospective studies on metformin and TSH were published in August 2012. Oddly, in contrast to all these other papers, a study by Díez and Iglesias from Madrid found no association between TSH and metformin.[18] A second retrospective study by Cappelli et al. did find a significant reduction in TSH in euthyroid patients associated with metformin use.[19]

The potential of using metformin in patients on TSH suppression therapy is obvious. To quote another August 2012 paper, "To find a drug with few if any side effects that inhibited TSH appeared a very attractive option, as such drugs might become useful in the treatment of thyroid cancer patients where sometimes the desired TSH suppression is achieved at the expense of unwanted iatrogenic hyperthyroidism, resulting from excess dose of thyroxine" [20]

Although metformin is sold as a prescription drug, it may be considered a modern cousin of the plant goat's rue (*Galega officinalis*). This plant has a long history of use in treating diabetes, its use dating back to ancient Egypt.[21]

While metformin has been prescribed in Britain since 1958 and in Canada since 1972, it has only been used in the US since 1995. Metformin is widely used; 120 million prescriptions are written for it each year.[22]

In recent years there has been considerable interest in using metformin to treat cancer. "Epidemiological studies have consistently associated metformin use with decreased cancer incidence and cancer-related mortality. Furthermore, numerous preclinical and clinical studies have demonstrated anti-cancer effects of metformin, leading to an explosion of interest in evaluating this agent in human cancer."[23] Thus it is possible that metformin could also have a direct anti-thyroid-cancer impact on its own.

An April 2012 paper that examined impact of metformin on various thyroid cancer cell lines concluded, "Our results suggest this drug as adjuvant treatment for thyroid cancer in type 2 diabetic patients."[24] Another paper, this one published in May 2012, reported on the mechanics of how "metformin inhibits growth ... in medullary thyroid cancer cells."[25]

While discussing the care of patients undergoing TSH suppression, some mention must be made of L-carnitine, as it may also play a role in helping this patient population. While this amino acid in itself does not suppress TSH, it does seem

➤

to reduce the impact of thyroid hormone, making high-dose thyroid hormone treatment more tolerable.

This idea is an extrapolation of Salvatore Benvenga's work on L-carnitine and hyperthyroidism. Since 2000, Benvenga has been suggesting that L-carnitine can block thyroid hormone action on the cells. It actually appears to prevent both triiodothyronine (T3) and thyroxine (T4) entry into the cell nuclei.[26] Moreover, "L-carnitine is effective in both reversing and preventing symptoms of hyperthyroidism and has a beneficial effect on bone mineralization."[27]

From Benvenga's 2004 paper: "We showed that 2 and 4 grams per day of oral L-carnitine are capable of reversing hyperthyroid symptoms (and biochemical changes in the hyperthyroid direction. ..."[28]

Therefore, it has been common for us to use L-carnitine to ameliorate some of the side effects of the TSH suppression therapy that thyroid cancer patients are often subjected to.

Thus we have two relatively safe tools to offer thyroid cancer patients (and possibly others) that may make their treatment more tolerable and possibly more successful. Obviously, using metformin to treat cancer is still considered an off-label use. These new publications should, at the least, certainly encourage us to thoroughly rule out diabetes in all patients treated with TSH-suppressive doses of thyroid hormone.

Jacob Schor, ND, FABNO, has practiced as a naturopathic physician in Denver, Colorado, with his wife, Rena Bloom, ND, since they graduated from National College of Naturopathic Medicine in 1991. He was humbled in 2008 when presented with the Vis Award by the American Association of Naturopathic Physicians (AANP). He has had the honor of serving the members of the Oncology Association of Naturopathic Physicians as a board member and currently as president. Dr. Schor began a term on the AANP's board of directors in January 2012. He is a frequent contributor to, and associate editor of, the *Natural Medicine Journal*.

Notes

1. Thyroid cancer [Web page]. National Cancer Institute. http://www.cancer.gov/cancertopics/types/thyroid.
2. Pearce E, Braverman L. Clinical use of TSH suppression: why, when, and how? *Hot Thyroidol*. January 2005;1. Available at www.hotthyroidology.com.
3. Ellerhorst JA, Naderi AA, Johnson MK, et al. Expression of thyrotropin-releasing hormone by human melanoma and nevi. *Clin Cancer Res*. 2004 Aug 15;10(16):5531–5536.
4. Ellerhorst JA, Sendi-Naderi A, Johnson MK, Cooke CP, Dang SM, Diwan AH. Human melanoma cells express functional receptors for thyroid-stimulating hormone. *Endocr Relat Cancer*. 2006 Dec;13(4):1269–1277.
5. Thomas CG Jr. Role of thyroid stimulating hormone suppression in the management of thyroid cancer. *Semin Surg Oncol*. 1991 Mar–Apr;7(2):115–119.
6. Abonowara A, Quraishi A, Sapp JL, et al. Prevalence of atrial fibrillation in patients taking TSH suppression therapy for management of thyroid cancer. *Clin Invest Med*. 2012 Jun 1;35(3):E152–E156.
7. Chen CH, Chen JF, Yang BY, et al. Bone mineral density in women receiving thyroxine suppressive therapy for differentiated thyroid carcinoma. *J Formos Med Assoc*. 2004 Jun;103(6):442–447.
8. Sugitani I, Fujimoto Y. Effect of postoperative thyrotropin suppressive therapy on bone mineral density in patients with papillary thyroid carcinoma: a prospective controlled study. *Surgery*. 2011 Dec;150(6):1250–1257.
9. Reverter JL, Colomé E. Potential risks of the adverse effects of thyrotropin suppression in differentiated thyroid carcinoma. [In Spanish.] *Endocrinol Nutr*. 2011 Feb;58(2):75–83.
10. Biondi B, Filetti S, Schlumberger M. Thyroid-hormone therapy and thyroid cancer: a reassessment. *Nat Clin Pract Endocrinol Metab*. 2005 Nov;1(1):32–40.
11. Sugitani I, Fujimoto Y. Does postoperative thyrotropin suppression therapy truly decrease recurrence in papillary thyroid carcinoma? A randomized controlled trial. *J Clin Endocrinol Metab*. 2010 Oct;95(10):4576–8453. Epub 2010 Jul 21.
12. Biondi B, Cooper DS. Benefits of thyrotropin suppression versus the risks of adverse effects in differentiated thyroid cancer. *Thyroid*. 2010 Feb;20(2):135–146.
13. Pearce and Braverman. Op. cit.
14. Vigersky RA, Filmore-Nassar A, Glass AR. Thyrotropin suppression by metformin. *J Clin Endocrinol Metab*. 2006 Jan;91(1):225–7. Epub 2005 Oct 11.
15. Isidro ML, Penín MA, Nemiña R, Cordido F. Metformin reduces thyrotropin levels in obese, diabetic women with primary hypothyroidism on thyroxine replacement therapy. *Endocrine*. 2007 Aug;32(1):79–82.
16. Cappelli C, Rotondi M, Pirola I, et al. TSH-lowering effect of metformin in type 2 diabetic patients: differences between euthyroid, untreated hypothyroid, and euthyroid on L-T4 therapy patients. *Diabetes Care*. 2009 Sep;32(9):1589–1590.
17. Rotondi M, Cappelli C, Magri F, Botta R, Dionisio R, Iacobello C, et al. Thyroidal effect of metformin treatment in patients with polycystic ovary syndrome. *Clin Endocrinol (Oxf)*. 2011 Sep;75(3):378–381.
18. Diez JJ, Iglesias P. Relationship between serum thyrotropin concentrations and metformintherapy in euthyroid patients with type 2 diabetes. *Clin Endocrinol (Oxf)*. 2012 Jun 12.
19. Cappelli C, Rotondi M, Pirola I, et al. Thyreotropin levels in diabetic patients on metformin treatment. *Eur J Endocrinol*. 2012 Aug;167(2):261–5. Epub 2012 May 29.
20. Alevizaki M. Metformin and the thyroid: some questions still remain. *Clin Endocrinol (Oxf)*. Epub 2012 Aug 7. doi: 10.1111/cen.12005.
21. Witters LA. The blooming of the French lilac. *J Clin Invest*. 2001 Oct;108(8):1105–1107.
22. Bailey CJ, Day C: Metformin: its botanical background. *Pract Diab Int*. 2004;21:115–117.
23. Dowling RJ, Niraula S, Stambolic V, Goodwin PJ. Metformin in cancer: translational challenges. *J Mol Endocrinol*. 2012 Mar 29;48(3):R31–R43.
24. Chen G, Xu S, Renko K, Derwahl M. Metformin inhibits growth of thyroid carcinoma cells, suppresses self-renewal of derived cancer stem cells, and potentiates the effect of chemotherapeutic agents. *J Clin Endocrinol Metab*. 2012 Apr;97(4):E510–E520. Epub 2012 Jan 25.
25. Klubo-Gwiezdzinska J, Jensen K, Costello J, et al. Metformin inhibits growth and decreases resistance to anoikis in medullary thyroid cancer cells. *Endocr Relat Cancer*. 2012 May 24;19(3):447–456. Print 2012 Jun.
26. Benvenga S, Lakshmanan M, Trimarchi F. Carnitine is a naturally occurring inhibitor of thyroid hormone nuclear uptake. *Thyroid*. 2000 Dec;10(12):1043–1050.
27. Benvenga S, Ruggeri RM, Russo A, Lapa D, Campenni A, Trimarchi F. Usefulness of L-carnitine, a naturally occurring peripheral antagonist of thyroid hormone action, in iatrogenic hyperthyroidism: a randomized, double-blind, placebo-controlled clinical trial. *J Clin Endocrinol Metab*. 2001 Aug;86(8):3579–3594.
28. Benvenga S, Amato A, Calvani M, Trimarchi F. Effects of carnitine on thyroid hormone action. *Ann N Y Acad Sci*. 2004 Nov;1033:158–167.

ADVANCED PROBIOTICS FROM
THE DIGESTIVE CARE EXPERTS

High-Potency **Ultimate FloraMax** Probiotics

Because good health begins with a balanced digestive tract.*

Advanced Naturals—the obvious choice for probiotic therapy

- ✔ Billions of live cultures per serving
- ✔ Potent multi-strain probiotic blends
- ✔ Delayed-release delivery system
- ✔ Guaranteed potency

Advanced Naturals™
Natural Digestive Care

Call to set up a Professional Account
1-800-690-9988
www.**advancednaturals**.com

*This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Basic Lifestyle Interventions for High Blood Pressure and Cholesterol

by Jeremy Mikolai, ND

High blood pressure is the most prevalent cardiovascular disease in America.[1] It is the primary risk factor for heart attacks, stokes, and severe cardiovascular morbidity.[2] Greater than 95% of high systemic arterial blood pressure is primary hypertension, formerly called essential hypertension. While we can hypothesize some potential mechanisms for primary hypertension, we ultimately do not know what causes it. We do know that there is a general dose-dependent relationship between the elevation of the blood pressure and its negative consequences; the higher the blood pressure, the higher the likelihood of bad outcomes.[3–5]

A dose-dependent relationship also exists between lipid levels in the blood and the likelihood for poorer cardiovascular health. The higher the lipid levels (cholesterol and triglycerides), the more likely a person is to have bad outcomes. Important genetic dyslipidemias exist and they are more common than is often appreciated (about 1 in 500 for heterozygous familial hypercholesterolemia in the US).[6] Yet we know that the majority of dyslipidemias in the developed world are acquired, not genetic.

Metabolic syndrome is a pattern of acquired pathological conditions that create greatly increased risk for type 2 diabetes mellitus and cardiovascular disease, as well as other forms of chronic disease. Several different organizations have suggested definitions and clinical criteria for defining "metabolic syndrome." Despite their differences, their purpose is to identify central obesity and the insulin-resistance characteristics that accompany it. Those characteristics include hypertension and dyslipidemia.

The majority of cases of metabolic syndrome, hypertension, and dyslipidemia in the US are lifestyle driven. The foundational treatments for addressing them in both the short and the long term also need to be lifestyle driven. Moreover, therapeutic lifestyle modifications are often able to address multiple conditions simultaneously. Take weight loss, for instance, which improves blood pressure, blood lipids, and insulin sensitivity simultaneously. Therapeutic lifestyle changes do something more than address any individual condition or even set of conditions; they create the foundations for health.

The risks for hypertension begin to rise as soon as the blood pressure is greater than 115 mmHg over 75 mmHg. There is a strong association between blood pressure and cardiovascular disease; the risk of cardiovascular disease doubles with each increase of 20 points of systolic blood pressure.[3] High blood pressure is the number one risk factor for strokes of any type.[5,7] It is associated with coronary artery disease and heart attacks. It dramatically increases the likelihood of heart failure.[3]

There is some debate in the medical literature about whether we are overtreating mildly elevated blood pressure. A recent systematic review produced by the Cochrane Hypertension Group concerning the use of pharmacotherapy for the treatment of mild hypertension demonstrated that there was no difference in mortality, coronary heart disease, stroke, or cardiovascular events over 4 to 5 years of pharmaceutical treatment of mild high blood pressure, defined as 140 to 159 mmHg systolic blood pressure and/or 90 to 99 mmHg diastolic blood pressure.[8] This meta-analysis was derived from four randomized controlled trials (RCTs) comprising 7080 participants on the outcomes of coronary heart disease, stroke, and total cardiovascular events and 8912 participants on the outcome of total mortality. The comparison was between participants of RCTs of pharmacotherapy versus placebo for the treatment of mild primary hypertension (less than 159/99 mmHg) in primary prevention. About 9% of participants discontinued pharmaceutical treatment due to adverse events.[8]

There are some important things to remember about the Diao et al. 2012 Cochrane review. The meta-analysis data were derived from just four RCTs

and the total number of participants from those four trials on most of the outcomes was 7080. So this study is much too small to influence our management of patients in the care setting at this time, which is why its authors concluded that more trials are needed to help generate data on this issue. It also tells us that a large number of our patients being treated for mild hypertension with pharmacotherapy, about 9%, experience side effects severe enough to make them want to give up that treatment.

By contrast, the newest set of guidelines from the European Society of Hypertension and the European Society of Cardiology (ESH/ESC) do not recommend any substantial changes in our present management of the condition. In fact, they recommend that all patients under 80 years old maintain a systolic blood pressure (SBP) below 140 mmHg.[9] The newest guidelines on blood pressure from the eighth Joint National Committee (JNC-8) on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure are expected soon. Most authorities expect the JNC-8 to make very few, if any, changes from the JNC-7 guidelines.

It is important that we distinguish between types of hypertension. Arterial hypertension can be primary or secondary, and the type of prevention that it provides can be primary or secondary. Primary hypertension, formerly called essential hypertension, is idiopathic, meaning that we don't know what causes it. About 95% of cases of hypertension are primary type. There are several hypotheses about the potential causes of primary hypertension, including increased sensitivity of the renin-angiotensin-aldosterone system, increased catecholamine sensitivity, genetics, decreased nephron mass in the kidneys, and endothelial dysfunction.[10]

Secondary hypertension is high blood pressure caused by another known condition. Most commonly, those secondary causes are chronic kidney diseases, renovascular disease, bilateral idiopathic hyperaldosteronism, sleep apnea, and thyroid disease; but less commonly it can be caused by coarctation of the aorta, neuroendocrine tumors, and others. Secondary hypertension is a complex topic; it is typically more resistant to treatment and occurs alongside other pathologies of the cardiovascular system or other internal organs. Many lifestyle interventions can be appropriate in certain cases of secondary hypertension, but some are contraindicated. Due to the scope and nuance of the topic of secondary hypertension, we will confine ourselves to primary hypertension for this discussion.

Primary prevention refers to intercepting and modifying a risk before the event associated with that risk occurs. We treat people who have hypertension to prevent them from having their first heart attack or stroke; that is primary prevention. Secondary prevention is attempting to stop the recurrence of an event in a patient who has already had one or more events. We treat the hypertension of people who have survived a stroke to prevent them from having another stroke; that is secondary prevention. So, we may be treating a patient's blood pressure as a means of primary or secondary prevention.

The point about overtreatment is an interesting one. Certainly, overtreatment creates unnecessary burden on the patient in terms of both treatment participation and any adverse events or morbidity from medication use; it incurs financial cost to the payer and imparts cost to the health-care system. However, the majority of these burdens pertain to pharmacotherapy and contacts with the health-care system. We use risk stratification to help us to determine the level of intervention appropriate in cardiovascular primary prevention. The benefit of aggressive risk factor modification in secondary prevention or in those patients with very high risk and risk equivalents are more clear than those in primary prevention, but when the interventions in question are lifestyle modifications that address risk factors and create the foundations for health simultaneously, the benefits are apparent across the continuum.

Fortunately, the new ESH/ESC guidelines address a number of lifestyle and dietary therapies, "nonpharmacotherapy" for helping to regulate hypertension. The importance of the lifestyle and dietary foundation for the redress of hypertension, dyslipidemia, and metabolic syndrome cannot be overstated. We are encouraged to risk-stratify patients on the basis of their likelihoods for future cardiovascular events to help us make management decisions about their cardiovascular targets and the therapeutic strategies used to get them to those targets, yet we should begin every management strategy with underpinning lifestyle and dietary changes. Nonpharmacotherapy interventions are sanctioned as the first-line in redress of any of these three conditions by all of the authorities that create guidelines for their evaluation and treatment. Lifestyle changes can be used to enhance and complement a pharmacotherapy strategy; they may be capable of maintaining primary control over blood pressure and lipids, in some cases; they are the lifelong strategies necessary to rehabilitate the underlying cause of the problem and create the foundations for health moving forward for the patient.

The five basic therapeutic lifestyle changes to address hypertension are straightforward and applicable to the vast majority of cases of primary hypertension. They are: (1) maintain a sodium-controlled diet that is rich in potassium; (2) maintain frequent exercise; (3) achieve and maintain and ideal body weight; (4) eliminate or decrease use of substances including tobacco, alcohol (in excess), and over-the-counter pain relievers/nonsteroidal anti-inflammatory drugs (NSAIDs), but also use of sympathomimetic drugs, such as amphetamines, cocaine, even caffeine; (5) maintain sufficient vitamin D levels.[10]

➤

There has been considerable debate about sodium-restricted diets. The overall prevalence of true "sodium-sensitive" hypertension is thought to be low. On the other hand, the evidence from the DASH trials demonstrated that restricting sodium to less than 2300 mg/day resulted in significant decreases in blood pressure regardless of whether a person began with normal or high blood pressure.[11] Two recent meta-analyses failed to show the significance of sodium restriction in lowering cardiovascular morbidity and mortality. One of these studies demonstrated that, despite a significant decrease in the number of cardiovascular events in the salt-restricted group compared with the group that had no salt restriction, there was no difference in mortality between the two groups.[12,13]

The new ESH/ESC guidelines recommend daily salt (sodium chloride) restriction to 5 to 6 g salt/day, as a reduction from a typical 9 to 12 g/day diet. Those 6 grams of salt (sodium chloride) are equivalent to 2300 mg/day of sodium. This is the same amount of sodium restriction that was recommended in the JNC-7 guidelines from 2003.[14] Previous ESH/ESC 2007 guidelines recommended limiting sodium to under 2000 mg/day.[15] The US Departments of Agriculture and Health and Human Services dietary guidelines from 2010 recommend further sodium restriction, down to less than 1500 mg in any patient: over age 51 years, of black race, or with a history of hypertension, diabetes mellitus, or chronic kidney disease.[16]

Several studies demonstrate that a reduction of approximately 1700 mg/day of sodium intake correlates with a decrease in blood pressure of about 5 mmHg SBP and about 3 mmHg DBP (5/3 mmHg).[17] Benefits from a sodium-conscientious diet seem to extend to further BP reduction and control for patients on pharmacotherapy. Sodium restriction appears to increase the efficacy of pharmacotherapy, in some studies demonstrating a further reduction of 9/3 mmHg in blood pressure.[18] Calcium channel antagonists appear to be affected least by this relationship, while diuretics and angiotensin converting enzyme inhibitors (ACEIs) appear to be most affected.[18–21]

Eating a potassium-rich diet and increasing the potassium-to-sodium ratio in the diet are also pillars of importance in the low-sodium diet. The ratio of urinary sodium to potassium excretion correlates with a dose-dependent increase in systolic and diastolic BP.[22] Eating sufficient potassium in the diet may be preferable to potassium supplementation in many individuals, especially based on electrolyte status and medication regimen. However, there is some evidence to demonstrate that potassium supplementation may decrease BP about 4.4/2.5 mmHg in hypertensive patients.[23]

It is worth mentioning that manipulation of electrolytes and electrolyte balance is not always appropriate or straightforward in many circumstances of hypertension. The various pharmaceuticals being used in the treatment, the type of hypertension that the patient has, and the other conditions that the patient has, such as diabetes or chronic kidney disease, all play important parts in our choice and determination of interventions. When patients have hyponatremia, low sodium, for example, we do not ask them to limit their salt intake. When patients are taking multiple drugs that raise their potassium levels, for instance, we are typically advising them to decrease the potassium in their diets, even if they have high blood pressure. So, all of these recommendations are still context dependent and have to be viewed and used in light of the other conditions and complications. Yet our focus is on those interventions that are the basic lifestyle changes, are available to almost all of our patients, have a good level of evidential support for their use, and form the foundations of health for the patient.

The second basic therapeutic lifestyle intervention for hypertension is exercise. Aerobic exercise does make the greatest impact on BP, but resistance exercise also reduces it. The evidence from meta-analyses of RCTs shows that aerobic exercise decreases BP by up to 6/3 mmHg, while moderate-intensity resistance training (dynamic or isometric) lowers BP by about 4/4 mmHg.[24–27] Ideally, we would have each patient on a combination of aerobic and resistance exercise. Clinically, it is very useful not to have to depend on one type of exercise or another, since any patient may be more or less able to perform exercise of one type or another at any given time. Regardless of patients' status of health and mobility, there are exercise recommendations that are appropriate to them and can help decrease BP.

The third basic lifestyle intervention is achieving and maintaining an ideal body weight. ESH/ESC guidelines recommend maintaining a BMI less than 25 kg/m2 with a waist circumference less than 102 cm (40 in) for men and less than 88 cm (35 in) for women.[9] For each kilogram of body weight that is lost, the blood pressure decreases 0.5 to 2.0 mmHg.[28] Even a 10% reduction in body mass can make a substantial impact on blood pressure.

The fourth lifestyle intervention for management of hypertension is to eliminate or limit the use of substances known to exacerbate blood pressure. Excess alcohol intake appears to be of greatest concern. Alcohol consumption in excess of 2 drinks per day in women and 3 in men is correlated with increased incidence of high blood pressure. Higher alcohol consumption is correlated with a stronger response on the blood pressure; the strongest response is seen in those with use in excess of 5 drinks per day. Limitation or cessation of alcohol use in those

who drink excessively lowers blood pressure.[29]

All NSAIDs can cause increased BP and a decreased response of antihypertensive medications. The effect size is variable, but the average BP increase from NSAID use has been stated as 3/2 mmHg.[30-32] There is conflicting evidence about the effect of acetaminophen on BP, but it is reasonable to expect that it may increase blood pressure when used at typical doses.[33] Low-dose aspirin therapy does not appear to interfere with antihypertensive treatment or to raise blood pressure.[34]

The fifth basic lifestyle intervention in high blood pressure is to address the vitamin D status of the patient. Frank deficiency of vitamin D3 can result in high blood pressure. Those with deficiencies or insufficiencies of 25-hyrodoxyvitamin D should be supplemented.[35]

Patient education alone can make a substantial change in the blood pressure. Clinician-patient education interventions have been shown to substantially lower BP, in some cases by up to 6.6/3.8 mmHg.[36] A peer-mediated sharing experience about hypertension has also been shown to produce similar BP reductions.[37]

Several therapeutic diets may be relevant to the control of high blood pressure, and several of them may help us to address other elements of the cardiovascular risk profiles of our patients. Particular dietary interventions can be powerful in both addressing a pathological condition and helping establish the foundations for health and promoting behaviors that encourage health and prevent further chronic disease. Many of the basic lifestyle interventions relevant for addressing elevated blood pressure overlap with the interventions that address dyslipidemia and other elements of the metabolic syndrome.

The National Cholesterol Education Program (NCEP)/Adult Treatment Panel III (ATPIII) guidelines define "metabolic syndrome" as the presence of any 3 out of the following 5: abdominal obesity with a male waist circumference greater than 40 in (102 cm) or a female greater than 35 in (88 cm), elevated serum triglycerides greater than 150 mg/dL, serum HDL cholesterol less than 40 mg/dL for males or less than 50 mg/dL for females, blood pressure greater than 130/85 mmHg or on treatment for blood pressure, fasting plasma glucose greater than 100 mg/dL, or known history of type 2 diabetes.[38]

Other metabolic syndrome criteria are defined slightly differently; the International Diabetes Federation makes abdominal obesity and essential part of its definition. The World Health Organization (WHO) makes insulin resistance a defining and essential component to its criteria. In any of its guises, metabolic syndrome raises the risks of type 2 diabetes and cardiovascular events, as well as other chronic diseases, in the individual who presents with it. The metabolic syndrome raises an individual's risk for type 2 diabetes mellitus 2- to 3.5-fold.[39] Metabolic syndrome increases the relative risk of cardiovascular disease by 1.5- to 2.2-fold and increases the all-cause mortality risk by 1.27- to 1.6-fold.[40-42] Metabolic syndrome is also associated with fatty liver disease fibrosis and cirrhosis, polycystic ovarian syndrome, chronic kidney disease, gout and hyperuricemia, sleep disordered breathing, and hepatocellular and cholangiocarcinomas.[43-53]

Lifestyle interventions are crucial in the redress of metabolic syndrome. Many of the therapeutic lifestyle interventions for addressing hypertension will overlap or intercalate synchronously with the basic interventions that we will use for dyslipidemia and the metabolic syndrome. Debate exists, of course, about the relative importance of the hazard created by elevated total cholesterol and low-density lipoprotein cholesterol (LDL-c) in ➤

the absence of other cardiovascular risk factors and the degree of real risk reduction that is offered by statin therapy in the primary prevention of cardiovascular events. Again, in the arenas of secondary prevention and in primary prevention for those with high-risk features and with risk equivalents such as diabetes type 2, the data are stronger and there appear to be more clear benefits to restrictive LDL-c and total cholesterol (TC) targets. Moreover, risk factors are additive, and with each addition of another risk factor, the contributions of the others become more hazardous. Fortunately, if we begin our treatment strategy with lifestyle interventions that address several conditions simultaneously and promote the foundations for health, we will be doing our patients a service on several fronts.

We begin addressing dyslipidemia by introducing a TLC diet format and several individual dietary recommendations to reduce cholesterol and triglycerides. We encourage a plant-based diet that adheres to the TLC fat restrictions or less. TLC dietary restrictions emphasize less than 20% to 30% of daily calories from fat, less than 7% of those from saturated fat, and less than 200 to 300 mg of dietary cholesterol per day. The TLC diet has been shown to lower LDL-c by 10%.[54]

Recommendations for various therapeutic diets overlap substantially in the setting of high blood pressure, dyslipidemia, and metabolic syndrome and demonstrate how several therapeutic dietary strategies can be used simultaneously. The TLC dietary guidelines coexist nicely with the DASH, Mediterranean, and plant-based dietary guidelines. It is widely acknowledged that there are several important health-promoting eating behaviors present in the Mediterranean-style diet, including high monounsaturated to saturated fat ratio; low to moderate red wine consumption; high consumption of legumes, grains and cereals, fruits, and vegetables; low consumption of meat and meat products; increased consumption of fish; moderate consumption of milk and dairy products; dining in community; and other behaviors. The two features considered most defining are the exchange of saturated fats for monounsaturated fats and increased fruit and vegetable intake.[55] The DASH plan also defines increased fruit and vegetable intake as part of its strategy. Plant-based diets emphasize the intake of fruits and vegetables as the primary source of dietary calories. As such, they naturally include increased consumption of dietary fiber and plant sterols. In a comparison of Mediterranean diet versus low-fat diet, the Mediterranean group had greater weight loss; lower blood pressure; improved lipid profiles; and improvements in insulin resistance, endothelial function, and inflammation.[56] Whereas a DASH plan, which had a sodium restriction to 2400 mg/day and permitted more dairy intake than in the Mediterranean diet study, demonstrated improved triglycerides, diastolic blood pressure, and fasting glucose than in the comparison diet, a weight-reducing diet emphasizing healthful food choices.[57]

In fact, none of these therapeutic diets are necessarily incompatible with one another. They can be combined appropriately or along with other strategies to meet therapeutic targets. Patients on a TLC diet can decrease their lipids by 10%.[54] A Mediterranean diet can be made to meet the TLC guidelines, the DASH guidelines, or other dietary guidelines such as gluten-free, dairy-free, plant-based, or other necessary interventions.

We encourage patients to work toward several other small daily dietary interventions that can accumulate to large changes in the lipid profile, blood pressure, and metabolic syndrome traits. We help patients to move in the direction of a dietary intake of 40 to 50 grams per day of fiber. Many are starting from a daily intake that is only a fraction of this amount, so it is important to assess where a person is starting and work on manageable goals for increasing dietary fiber. We advise patients to get 50% of their fiber as soluble fiber and 50% as insoluble. Insoluble fiber helps to bind up cholesterol; insoluble fiber keeps cholesterol moving out of the body in the stool. Increased dietary fiber can lower LDL-c 5 to 10% as well as help decrease blood pressure and body weight.[54]

We encourage patients to work toward consumption of 2 to 2.5 grams/day of plant sterols and stanols, in the absence of contraindications. Plant sterols and stanols compete with cholesterol for absorption in the intestines. Plant sterols and stanols can help to lower cholesterol by 10% or more. Several other small, strategic additions to the diet can help to make impacts on the cholesterol: increasing consumption of nuts decreases LDL-c by about 5% to 8%, and consumption of soy protein decreases cholesterol about 3% to 10%.[54]

The strategic success or failure of lifestyle interventions is in putting them all together. The most difficult part of change is maintenance. Most practitioners have observed that the more changes that we ask a patient to make, the fewer will be made. Lifestyle changes are habitual: we have the power of old habits working against us; eventually we have the power of new habits working for us. Therefore it stands to reason that the more of these lifestyle modifications that we can incorporate into a single behavior, the higher its probable long-term success. On that front, there are two powerful lifestyle interventions that most people can introduce and maintain with relative ease and which can accomplish a great deal of the important work to be done.

Two high-yield lifestyle interventions that can bring rapid improvements in blood pressure, lipids, and blood sugar with minimal dietary changes are the optimization of flaxseed and cinnamon in the diet. Small clinical trials have shown that 30 grams per day of ground flaxseed added to the diet over 6 months result in BP reductions of up to 10/7 mmHg in the flaxseed group when compared with controls. Participants who started the trial with the most severe high blood pressure showed even greater reductions in blood pressure of 15/7 mmHg.[58] Flaxseed, when ground, is an excellent source of soluble and insoluble fiber. This not only helps to lower cholesterol, but also to decrease the body's absorption of carbohydrates eaten together with that fiber; this is the principle of the glycemic index. Ground flaxseed contains plant sterols and parent omega-3 oils, chiefly alpha-linolenic acid. Therefore, eating ground flaxseed daily is a way to decrease your blood pressure and the glycemic index of your meal while helping to provide soluble and insoluble fiber and plant sterols to your diet. We recommend about 6 to 8 tablespoons (Tbsp) of ground flaxseed per day to patients. With that amount, we can ensure that we are getting a blood pressure benefit, a boost of about 10 grams in daily fiber intake, and about 40 mg of plant sterols. There are plenty of other ways that patients can negotiate to get adequate daily fiber through use of psyllium supplements, oatmeal or barley consumption, or others; flax is simply an inexpensive and user-friendly way to meet several goals simultaneously.

Optimizing a patient's daily cinnamon intake is another straightforward, inexpensive, and user-friendly way to achieve intervention simultaneously on several aspects of dyslipidemia and metabolic syndrome. In the past, the evidence on cinnamon has been conflicting. Recent past meta-analyses have showed no benefit to the use of cinnamon in the treatment of high blood sugar and metabolic syndrome. However, the most recent and updated systematic review and meta-analysis of trials of cinnamon for decreasing blood sugar demonstrate fairly impressive effects and include several important effects on cholesterol.

Allen et al. (2013) published their review and meta-analysis of 10 randomized controlled trials of the use of cinnamon as an intervention for fasting plasma glucose levels, glycated hemoglobin (HbA1c), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-c), high-density lipoprotein cholesterol (HDL-c), and/or triglycerides. The doses of cinnamon varied from 120 mg to 6000 mg/day for 4 to 18 weeks. The analysis demonstrated that cinnamon consumption significantly decreased: fasting plasma glucose levels by 24.6 mg/dL, TC 15.6 mg/dL, LDL-c 9.4 mg/dL and triglycerides by 29.6 mg/dL. Cinnamon mildly raised HDL-c levels and there was no significant change in HbA1c levels. There was a high degree of heterogeneity among the studies, meaning that the various studies in the review and meta-analysis used different types and amounts of cinnamon, measured different outcomes, and conducted their studies in slightly different ways. That may partly account for why significant changes in HbA1c were not seen.

High heterogeneity will lead conventional authorities to argue that the results of this study are not yet applicable to patient care; that we do not have enough information yet to know the correct dose, duration, and form of treatment; that we do not have a standardized and reliable source; and that we cannot be sure of its interactions with other medications. These are all important points to be taken into account and monitored. Yet with appropriate monitoring and follow-up, it is likely that we can feel good about recommending cinnamon at doses equivalent to culinary use on a daily basis. We typically recommend ground cinnamon at ¼ to ½ of a teaspoon three times daily with meals.

Pharmacologic and nonpharmacologic treatments have their place in the clinical redress of hypertension, high cholesterol, and metabolic syndrome. As integrated providers and practitioners of complementary and alternative medicine (CAM), we have an opportunity to create the foundations for health and disease reversal in the interventions that we recommend for patients with these conditions. Therapeutic lifestyle interventions are available to virtually all patients with high blood pressure and high blood lipids. Therapeutic lifestyle changes form the foundations for healthful living that not only help patients overcome their present health concerns but also give them the possibility of living a more healthy life for the future, one freer from chronic disease.

To contact the author or for further information:
Jeremy Mikolai, ND
Heart & Lung Wellness Center
of Excellence in Naturopathic
Cardiovascular Medicine
Center for Natural Medicine Inc.
(CNM)
1330 SE Cesar E Chavez Blvd.
Portland, Oregon 97214
503-232-1100
CNMWellness.com
drmikolai@cnmwellness.com

This author has no financial conflicts of interest to declare.

Notes

1. Egan BM, Zhao Y, Axon RN. US trends in prevalence, awareness, treatment, and control of hypertension, 1988–2008. *JAMA* 2. 2010;303:2043.
2. Greenland P, Knoll MD, Stamler J, et al. Major risk factors as antecedents of fatal and nonfatal coronary heart disease events. *JAMA* 2. 2003;290:891.
3. Levy D, Larson MG, Vasan RS, et al. The progression from hypertension to congestive heart failure. *JAMA* 1996;275:1557.
4. Hsu CY, McCulloch CE, Darbinian J, et al. Elevated blood pressure and risk of end-stage renal disease in subjects without baseline kidney disease. *Arch Intern Med.* 2005;165:923.
5. Thrift AG, McNeil JJ, Forbes A, Donnan GA. Risk factors for cerebral hemorrhage in the era of well-controlled hypertension. Melbourne Risk Factor Study (MERFS) Group. *Stroke.* 1996;27:2020.

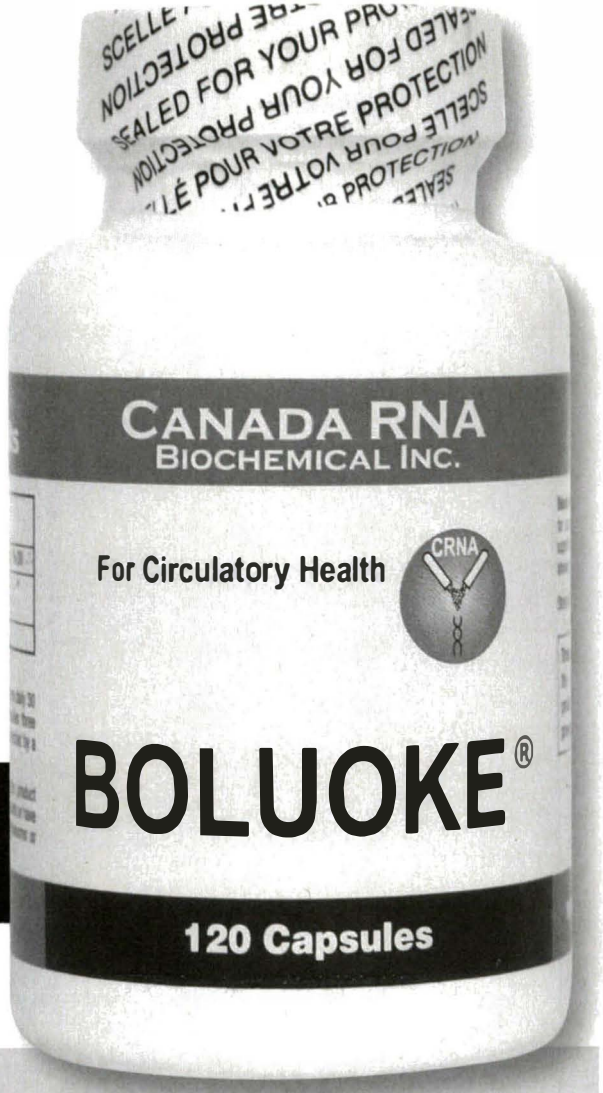
6. Rosenson RS, de Ferranti SD, Durrington P. Inherited disorders of LDL-cholesterol metabolism. In: Basow DS, ed. UpToDate. Waltham, MA; 2013.
7. Staessen JA, Fagard R, Thijs L, et al. Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension. The Systolic Hypertension in Europe (Syst-Eur) Trial Investigators. *Lancet*. 1997;350:757.
8. Diao D, Wright JM, Cundiff DK, Gueyffier F. Pharmacotherapy for mild hypertension. *Cochrane Database Syst Rev*. 2012;8. Article No. CD006742. doi:10.1002/14651858.CD006742.pub2.
9. Mancia G, Fagard R, Narkiewicz K, et al. 2013 Practice guidelines for the management of arterial hypertension of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC): ESH/ESC Task Force for the Management of Arterial Hypertension. *J Hypertens*. 2013;31:1925–1938.
10. Kaplan NM, Domino FJ. Overview of hypertension in adults. In: Basow DS, ed. UpToDate. Watham, MA; 2013.
11. Appel LJ, Brands MW, Daniels SR, et al. Dietary approaches to prevent and treat hypertension: a scientific statement from the American Heart Association. *Hypertension*. 2006;47:296.
12. He FJ, MacGregor GA. Salt reduction lowers cardiovascular risk: meta-analysis of outcome trials. *Lancet* 2. 2011;378:380.
13. Taylor RS, Ashton KE, Moxham T, et al. Reduced dietary salt for the prevention of cardiovascular disease: a meta-analysis of randomized controlled trials (Cochrane review). *Am J Hypertens*. 2011;24:843.
14. Chobanian AV, Bakris GL, Black HR, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension*. 2003;42:1206.
15. Mancia G, De Backer G, Dominiczak A, et al. 2007 Guidelines for the Management of Arterial Hypertension: The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). *J Hypertens*. 2007;25:1105.
16. US Dept of Agriculture and US Dept Health and Human Services. *Dietary Guidelines for Americans, 2010*. Washington, D.C.: U.S. Government Printing Office; 2010.
17. He FJ, MacGregor GA. Effect of longer-term modest salt reduction on blood pressure. *Cochrane Database Syst Rev* 2. 2004;4:CD004937.
18. Singer DR, Markandu ND, Sugden AL, et al. Sodium restriction in hypertensive patients treated with a converting enzyme inhibitor and a thiazide. *Hypertension*. 1991;17:798.
19. Slagman MC, Waanders F, Hemmelder MH, et al. Moderate dietary sodium restriction added to angiotensin converting enzyme inhibition compared with dual blockade in lowering proteinuria and blood pressure: randomised controlled trial. *BMJ*. 2 2011;343:d4366.
20. Cook NR, Cutler JA, Obarzanek E, et al. Long term effects of dietary sodium reduction on cardiovascular disease outcomes: observational follow-up of the trials of hypertension prevention (TOHP). *BMJ*. 2007;334:885.
21. Ram CV, Garrett BN, Kaplan NM. Moderate sodium restriction and various diuretics in the treatment of hypertension. *Arch Intern Med*. 1981;141:1015.
22. Hedayati SS, Minhajuddin AT, Ijaz A, et al. Association of urinary sodium/potassium ratio with blood pressure: sex and racial differences. *Clin J Am Soc Nephrol*. 2012;7:315
23. Whelton PK, He J, Cutler JA, et al. Effects of oral potassium on blood pressure. Meta-analysis of randomized controlled clinical trials. *JAMA*. 1997;277:1624.
24. Whelton SP, Chin A, Xin X, He J. Effect of aerobic exercise on blood pressure: a meta-analysis of randomized, controlled trials. *Ann Intern Med*. 2002;136:493.
25. Dickinson HO, Mason JM, Nicolson DJ, et al. Lifestyle interventions to reduce raised blood pressure: a systematic review of randomized controlled trials. *J Hypertens*. 2006;24:215.
26. Cornelissen VA, Buys R, Smart NA. Endurance exercise beneficially affects ambulatory blood pressure: a systematic review and meta-analysis. *J Hypertens*. 2013;31:639.
27. Cornelissen VA, Fagard RH, Coeckelberghs E, Vanhees L. Impact of resistance training on blood pressure and other cardiovascular risk factors: a meta-analysis of randomized, controlled trials. *Hypertension*. 2011;58:950.
28. Stevens VJ, Corrigan SA, Obarzanek E, et al. Weight loss intervention in phase 1 of the Trials of Hypertension Prevention. The TOHP Collaborative Research Group. *Arch Intern Med*. 1993;153:849.
29. Xin X, He J, Frontini MG, et al. Effects of alcohol reduction on blood pressure: a meta-analysis of randomized controlled trials. *Hypertension*. 2001;38:1112.
30. Grover SA, Coupal L, Zowall H. Treating osteoarthritis with cyclooxygenase-2-specific inhibitors: what are the benefits of avoiding blood pressure destabilization? *Hypertension*. 2005;45:92.
31. Pope JE, Anderson JJ, Felson DT. A meta-analysis of the effects of nonsteroidal anti-inflammatory drugs on blood pressure. *Arch Intern Med*. 1993;153:477.
32. Johnson AG, Nguyen TV, Day RO. Do nonsteroidal anti-inflammatory drugs affect blood pressure? A meta-analysis. *Ann Intern Med*. 1994;121:289.
33. Sudano I, Flammer AJ, Périat D, et al. Acetaminophen increases blood pressure in patients with coronary artery disease. *Circulation*. 2010;122:1789.
34. Zanchetti A, Hansson L, Leonetti G, et al. Low-dose aspirin does not interfere with the blood pressure-lowering effects of antihypertensive therapy. *J Hypertens*. 2002;20:1015.
35. Larsen T, Mose FH, Bech JN, et al. Effect of cholecalciferol supplementation during winter months in patients with hypertension: a randomized, placebo-controlled trial. *Am J Hypertens*. 2012;25:1215.
36. Roumie CL, Elasy TA, Greevy R, et al. Improving blood pressure control through provider education, provider alerts, and patient education: a cluster randomized trial. *Ann Intern Med*. 2006;145:165.
37. Houston TK, Allison JJ, Sussman M, et al. Culturally appropriate storytelling to improve blood pressure: a randomized trial. *Ann Intern Med*. 2011;154:77.
38. Grundy SM, Cleeman JI, Daniels SR, et al. Diagnosis and management of the metabolic syndrome: an American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. *Circulation*. 2005;112:2735.
39. Ford ES, Li C, Sattar N. Metabolic syndrome and incident diabetes: current state of the evidence. *Diabetes Care*. 2008;31:1898.
40. Ford ES. Risks for all-cause mortality, cardiovascular disease, and diabetes associated with the metabolic syndrome: a summary of the evidence. *Diabetes Care*. 2005;28:1769.
41. Galassi A, Reynolds K, He J. Metabolic syndrome and risk of cardiovascular disease: a meta-analysis. *Am J Med*. 2006;119:812.
42. Gami AS, Witt BJ, Howard DE, et al. Metabolic syndrome and risk of incident cardiovascular events and death: a systematic review and meta-analysis of longitudinal studies. *J Am Coll Cardiol*. 2007;49:403.
43. Marceau P, Biron S, Hould FS, et al. Liver pathology and the metabolic syndrome X in severe obesity. *J Clin Endocrinol Metab*. 1999;84:1513.
44. Hamaguchi M, Kojima T, Takeda N, et al. The metabolic syndrome as a predictor of nonalcoholic fatty liver disease. *Ann Intern Med*. 2005;143:722.
45. Hanley AJ, Williams K, Festa A, et al. Liver markers and development of the metabolic syndrome: the insulin resistance atherosclerosis study. *Diabetes*. 2005;54:3140.
46. Chen J, Muntner P, Hamm LL, et al. The metabolic syndrome and chronic kidney disease in U.S. adults. *Ann Intern Med*. 2004;140:167.
47. Zhang L, Zuo L, Wang F, et al. Metabolic syndrome and chronic kidney disease in a Chinese population aged 40 years and older. *Mayo Clin Proc*. 2007;82:822.
48. Kurella M, Lo JC, Chertow GM. Metabolic syndrome and the risk for chronic kidney disease among nondiabetic adults. *J Am Soc Nephrol*. 2005;16:2134.
49. Pasquali R, Gambineri A, Anconetani B, et al. The natural history of the metabolic syndrome in young women with the polycystic ovary syndrome and the effect of long-term oestrogen-progestagen treatment. *Clin Endocrinol (Oxf)*. 1999;50:517.
50. Vgontzas AN, Papanicolaou DA, Bixler EO, et al. Sleep apnea and daytime sleepiness and fatigue: relation to visceral obesity, insulin resistance, and hypercytokinemia. *J Clin Endocrinol Metab*. 2000;85:1151.
51. Ip MS, Lam B, Ng MM, et al. Obstructive sleep apnea is independently associated with insulin resistance. *Am J Respir Crit Care Med*. 2002;165:670.
52. Choi HK, Ford ES. Prevalence of the metabolic syndrome in individuals with hyperuricemia. *Am J Med*. 2007;120:442.
53. Choi HK, Ford ES, Li C, Curhan G. Prevalence of the metabolic syndrome in patients with gout: the Third National Health and Nutrition Examination Survey. *Arthritis Rheum*. 2007;57:109.
54. Bruckert E, Rosenbaum D. Lowering LDL-cholesterol through diet: potential role in the statin era. *Curr Opin Lipidol*. 2011;22:43--48.
55. Rees K, Hartley L, Flowers N, Clarke A, Hooper L, Thorogood M, Stranges S. 'Mediterranean' dietary pattern for the primary prevention of cardiovascular disease. Cochrane Database of Systematic Reviews 2013, Issue 8. Art. No.: CD009825. Doi:10.1002/14651858.CD009825.pub2.
56. Esposito K, Marfella R, Ciotola M, et al. Effect of a Mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. *JAMA*. 2004;292:1440.
57. Azadbakht L, Mirmiran P, Esmaillzadeh A, et al. Beneficial effects of a Dietary Approaches to Stop Hypertension eating plan on features of the metabolic syndrome. *Diabetes Care*. 2005;28:2823.
58. Rodriguez-Leyva D, et al. Potent antihypertensive action of dietary flaxseed in hypertensive patients. *Hypertension*. Epub Oct. 14, 2013 .
59. Allen RW, Schwartzman E, Baker WL, Coleman CI, Phung OJ. Cinnamon use in type 2 diabetes: an updated systematic review and meta-analysis. *Ann Fam Med*. 2013;(5):452--459.

Jeremy Mikolai, ND, is the NERC Integrative Cardiovascular Medicine Fellow for 2013–2015. Along with Drs. Tori Hudson, Martin Milner, and Sheryl Estlund and the Naturopathic Education and Research Consortium (NERC), he has designed the first-ever clinical fellowship program for naturopathic physicians to develop special expertise in areas of medical emphasis. Dr. Mikolai is an assistant professor of naturopathic medicine, clinical medicine, and research at the National College of Natural Medicine (NCNM) and adjunct faculty/professor of cardiology in the naturopathic medicine department at Universidad del Turabo in Gurabo, Puerto Rico. He is also a lead faculty member at the Heart and Lung Wellness Center of Excellence in Naturopathic Cardiovascular Medicine at NCNM and at the Naturopathic Institute of Cardiovascular and Pulmonary Medicine (NICVM).

Simply the Best

What More Can You Ask For?

- ✔ **Simply the best lumbrokinase**
- ✔ Now free of corn strach
- ✔ Extensively proven by clinical studies
- ✔ Suitable for patients with soy allergy
- ✔ Optimizes circulation:
  - ↓fibrinoids, ↓endothelin, ↑CGRP
  - ↓platelet aggregation, ↓blood viscosities
- ✔ Regulates inflammation: ↓C-RP, ↓TXA2, ↓Fibrinogen, ↓PAI-1
- ✔ Modifies CA-cell adhesion: ↓P-Selectin, ↓E-Selectin
- ✔ Decreases microbial resistance: breaks down biofilm
- ✔ No significant effect on INR or PTT



Your Patients. Your Reputation. Trust Nothing Less.

The statements herein have not been evaluated by the FDA. This product is not intended to diagnose, treat, or prevent any disease.

CRNA

CANADA RNA BIOCHEMICAL INC. Tel: (604) 273-2233 • **www.canadaRNA.com**

Call Us Today **1-866-287-4986**

***Boluoke®** is also available through:*

international antiaging-systems.com

BIORESOURCE INC

MOSS NUTRITION

MP Mountain States Health Products, Inc.

Pro Health Network Your Gateway to Better Health

Longevity Plus Anti-Aging Products

Researched Nutritionals solutions for life

NaturoDoc

return 2 health natural health remedies

Dragon's www.dragonsmedicalbulletin.com

Medical Bulletin

Your Quick Stop for Integrated Clinical Research Updates

FREE SUBSCRIPTION!

Canada RNA Biochemical Inc. is a proud sponsor of DMB. Sign up for a free subcription at the DMB website.

Managing Menopause with and without Bioidentical Hormones: Addressing Underlying Causes

by Amy Elizabeth Terlisner, NMD

One of the most common patient complaints that I see is a change in overall health due to menopausal hormone imbalance. Hormones are small molecules, secreted in tiny amounts, which have widespread effects on the body. Slight disturbances in their levels can bring on big changes in patients' health.

The average age of onset of menopause is 51, yet it can come much sooner or later for an individual woman. An optimal menopause is one in which there are no negative symptoms, and the woman stops having her period one day. We can conclusively diagnose the transition of menopause after one year of no cycles.

I have many patients who have experienced a cessation of menses with no issues, but I also have many more who have a multitude of symptoms. Typical signs and symptoms of menopause include but are not limited to hot flashes, night sweats, low libido, sleep disturbance, muscle pain, muscle weakness, joint pain, hair loss, change in texture of skin, fatigue, brain fog, depression, anxiety, increase in migraines or headaches, increase in seasonal allergy symptoms, and weight gain.

A very simplistic view is a diagnosis of lower estrogen; but in my practice, I believe that menopausal symptoms are the result of an underlying imbalance in one or all three of these glandular systems:

- ovary
- adrenal
- thyroid

A full workup includes testing hormone levels and other parameters of all three glands to include estradiol, estriol, progesterone, free and total testosterone, DHEA, cortisol, TSH, free T3, free T4, thyroid antibodies, and reverse T3. I also recommend ordering a full blood panel to assess the overall health of the patient, and this includes many more tests. These three glands produce hormones that interact with one another, antagonize (block) each other in some ways, and agonize (support) each other in different ways. The specifics of how this works is too lengthy for this article; however, I believe that it takes years of clinical practice to become an expert in hormone balancing.

How and why does it all happen? For many naturopathic physicians, menopause is a Western phenomenon, due to women's entering the transition in a state of adrenal and/or thyroid weakness. Prior to menopause, the ovary produces the bulk of estradiol and progesterone; however, after the ovary shuts down, it is the responsibility of the adrenal gland to make up the difference and take over, so to speak, for hormone production. A weak adrenal gland will promote overall hormone imbalance when the patient enters menopause.

Let's set the stage for menopausal symptoms. The two hormone systems that regulate energy in the body are the adrenal gland and the thyroid. The adrenal gland produces cortisol, which is involved in the sleep/wake cycle as well as energy during the day. The thyroid gland produces T3 and T4, which are metabolic stimulators – and also involved in energy production. A lifetime of stress, poor diet, toxins, and lack of exercise has generally stressed either one or both of these systems. It is very common that a woman in her late 40s and 50s has some imbalance in the thyroid and adrenal systems. Symptomatically, this translates into:

- fatigue
- brain fog
- inability to lose weight
- issues with blood sugar
- low body temperature
- depression and/or anxiety

In a menstruating female, the estradiol and progesterone produced by a functioning ovary are vital for proper sleep and other hormone balance. As these hormones start to decline toward an approaching menopause, they trip the other two glandular systems into disarray. It is simplistic to give the menopausal woman only estrogens or estrogen and progesterone without considering the other hormone systems. And it is simplistic to think that you can correct menopausal symptoms for life without correcting the other two glandular systems (adrenal and thyroid).

Correcting Menopausal Symptoms Without Hormone Therapy

As naturopathic physicians, many of us have stated that adrenal fatigue can trigger the source of menopausal symptoms. This is due to the fact that after the ovaries stop producing estradiol and progesterone, the adrenal glands are responsible for postmenopausal production. If the gland is fatigued, it cannot produce adequate amounts, and thus the patient experiences deficiency symptoms. Therefore treating the adrenal gland is a great, low-force way to correct menopausal symptoms without bioidentical hormone therapy.

In overview, treating the adrenal gland to support postmenopausal hormone balance involves:

- removal of processed foods, soda, alcohol, and other sources of dietary toxins
- consuming adequate protein at breakfast, lunch, and dinner, which stabilizes blood sugar and supports the adrenal gland
- consuming adequate clean water to move toxins out and perfuse tissues with necessary hormones
- addressing disordered sleep
- increasing exercise to stimulate adrenal hormone production
- addressing liver and colon health, organs that manage hormone metabolism
- providing direct adrenal support in the form of herbal medications and glandulars

In this article, we will address two of the above-mentioned ways to support adrenal function, and a foundational place to start with hormone support in the body is to address (1) disordered sleep and (2) detoxification pathways. Supporting patients in deeper sleep can help their adrenal and thyroid glands produce more hormones *on their own*.

Addressing Disordered Sleep: Basic sleep hygiene recommendations can be helpful and include creating a completely dark sleeping environment; removing sources of electromagnetic radiation in and near the bedroom; discontinuing electronic use 3 hours prior to bed; no caffeine after noon; and introduction of a sleep ritual including warm baths, book reading, and/or sleep-promoting herbal teas.

Naturopathic therapies that promote deeper, higher-quality sleep include:

- 5-HTP (5-hydroxytryptophan): The body converts the amino acid tryptophan into 5-HTP, which is then converted into serotonin and then into melatonin. Higher melatonin levels dictate better depth and quality of sleep. 5-HTP is best taken on an empty stomach prior to bedtime.
  - Typical dosages of 5-HTP can be from 50 to 300 mg and should be monitored by a prescribing physician, as there are drug-supplement interactions.
  - Dietary sources of tryptophan (which can raise 5-HTP levels in the body) include cottage cheese, egg white, meat, sesame seeds, and sunflower seeds. Consuming 10 to 15 grams of protein from these sources prior to bedtime can also promote more restful sleep.[1,2]
- GABA (a protein molecule): GABA is the main inhibitory neurotransmitter of the central nervous system. It is well known that activation of GABA receptors promotes sleep.[3]
  - GABA is supplied as an over-the-counter supplement. Typical doses range from 200 to 1000 mg and should be taken on an empty stomach prior to bed.
- Lemon balm (*Melissa officinalis*): This herb contains an ingredient that slows the natural breakdown of GABA in the body and promotes a deeper, better sleep.[4] Lemon balm is often used in herbal combination products and I have found it very successful clinically.
- Hops (*Humulus lupulus*): Hops increases GABA activity and is considered a sedative.[5]
- Passionflower (*Passiflora incarnata*): Another well-known sleep enhancer, this herb has been shown to improve sleep quality in double-blind, placebo-controlled trials.[6]

Addressing Detoxification Pathways: Working to optimize sleep in perimenopausal and menopausal women supports their natural hormone production. Oftentimes, getting patients sleeping better improves a number of other body systems. Another system that we focus on is the liver/colon/detox system in our patients. The liver is responsible for detoxifying hormones, whether coming from outside prescriptions or from the body's own production. The liver puts the metabolites from its detoxification pathways into bile (which will be eliminated in stool), in order to get them outside of the body. Bile, however, can be resorbed back through the colon wall, where it will recirculate to the liver. If bile is reabsorbed at too high a rate, too many toxins will be resorbed into the body, burdening its ability to process hormones. Bile is resorbed at high rates when the individual is constipated.

We take a detailed intake to assess digestive and colon health. If the colon and liver are sluggish we typically recommend 7 to 21 days of detoxification. Detoxification recommendations differ based upon our individual patients but typically look like this:

- Eliminate caffeine, alcohol, sugar, grains, dairy, gluten, and yeast.
- Breakfast is a detoxification smoothie including a medical food (consult your naturopathic physician on specifics regarding these products) with detoxification support nutrients, plain (low-carbohydrate) coconut or almond milk, coconut oil, organic pumpkin, avocado, and spinach.
- Lunch is repeat of a detoxification smoothie *or* a large salad that includes an assortment of organic and raw vegetables, nuts, and seeds.
- Dinner is a high-quality protein and two green vegetables.

➤

➤

- Snacks during the day can include an apple, raw vegetables, and/or a small amount of raw nuts.
- Drink 2 to 3 liters of reverse osmosis water with added electrolytes
- Take supplements that increase bowel absorption and elimination of toxins, including but not limited to diatomaceous earth, bentonite clay, and other fiber supplements

At the same time that patients engage in this type of detoxification, we typically address overgrowth of fungal elements in the gut with prescription and herbal therapies. To flush the dumping of wastes from this process, most patients undergo a short-term course of multiple colon hydrotherapy treatments.

It is important to note that detoxification should be done under the supervision of a physician. Detoxing too fast can make a patient sicker, exacerbate her symptoms, and be dangerous (especially if patients are taking prescription medications).

In many peri- or postmenopausal women, thyroid and adrenal gland dysfunction and general toxicity have caused weight gain and a sluggish metabolism. This often leads women to reach for sugar, caffeine, and processed foods for energy. When taking away these supports, however, it is important to remember to replace their systems – at the same time – with energy-promoting naturopathic therapies. This often involves the concurrent prescription of thyroid bioidentical hormone preparations and adrenal glandulars, which contain small amounts of adrenal hormones.

A last step in treating hormone imbalance with naturopathic therapies instead of estrogen/progesterone bioidentical hormone therapy would be the introduction of herbal therapies. Many herbs act as phytoestrogens or plant-based estrogenic compounds. Adding these herbs can increase the overall estrogenic message in the body and relieve deficiency symptoms.

Herbal Therapies for Menopause

Herbal therapies used for menopause are usually chosen because they hit receptors or have other direct influences on sex hormones (such as estradiol and progesterone). They have strong properties and can be helpful in more extreme cases of deficiency.

- Black cohosh (*Actaea racemosa*): Black cohosh is the most well-known plant with supportive properties. Compounds within the plant may hit estrogen receptors, thus alleviating estrogen deficiency symptoms. More recent research supports black cohosh's ability to modulate serotonin receptors.[7,8]
- Hops (*Humulus lupulus*): We've seen it for sleep and now it's time to mention a constituent in hops that has powerful estrogenic effects in the body: 8-prenylnaringenin. This molecule hits estrogen receptors, and clinically we see it alleviate estrogen deficiency symptoms.[9]
- Licorice (*Glycyrrhiza glabra*): Licorice is a wonderful phytoestrogen that can alleviate menopausal symptoms. This is a great herb for menopausal treatment, as it also supports the adrenals. This herb should be prescribed under the supervision of a physician, as it can increase blood pressure in patients.[10]
- Chaste tree (*Vitex agnus-castus*): Chaste tree may balance the pituitary's production of LH and FSH. It may promote progesterone production in the luteal phase of a menstrual cycle.[11] Clinically, we see a return to normal menstrual cycling if the patient is perimenopausal.

The most effective herbal therapies are crafted by companies that understand principles of herb quality, cultivation, and pharmacognosy. Supplements and other herbal formulas can differ widely in quality, so we recommend working with skilled physicians who understand their suppliers.

Correcting Menopausal Symptoms with Hormone Therapy

Sometimes menopausal symptoms are severe and/or the patient is unable to make lifestyle changes or take the time to treat adrenal and thyroid imbalance. In these cases, it makes sense to immediately prescribe hormone supplementation. Hormone therapy should be bioidentical in nature – meaning the exact same molecular structure that the gland produces. Today, there are many compounding pharmacies that work to produce quality formulations. We use compounded bioidentical estradiol, estriol, progesterone, and testosterone in our practice. For the purposes of this article we will address the use of two bioidentical hormones: estradiol and progesterone.

Progesterone: Progesterone in a menstruating female is produced after ovulation, when a ruptured ovarian follicle (which contained an egg) turns into a structure called the corpus luteum. The corpus luteum generates progesterone in the last half of a menstrual cycle to promote pregnancy if the egg is fertilized. Progesterone is produced by the adrenal gland in postmenopause, so our recommendation of adrenal support still holds as a foundational treatment.

Progesterone has a wide list of functions in the body. It is a smooth muscle relaxant, so deficiencies can promote headache, migraines, increases in blood pressure, and

menstrual cramps. It has diuretic functions and can promote swelling if levels are low. Progesterone has anxiolytic properties, meaning that it relaxes and calms the mind, so deficiencies can leave patients with irritability. Progesterone promotes deeper and higher-quality sleep, and even if patients are sleeping for 8 hours continuously, their sleep may still be of lower quality.

Progesterone given orally produces metabolites that work on sleep, while transdermal progesterone does not have these qualities; therefore, we typically prescribe oral progesterone. Patients' responses to hormones can vary dramatically, so our therapeutic range is typically from 25 to 200 mg per day. Patients should see an immediate improvement in sleep, mood, and other symptoms. Oftentimes, improving sleep leads to changes in other body systems due to increased healing. Patients often state that they are dreaming for the first time that they can remember.

Estradiol: Estradiol is the strongest estrogen that the body produces, and deficiencies in this hormone can cause bone loss, heart palpitations, hot flashes, night sweats, brain fog, and depression. Estrogens keep the vaginal mucosa thick and promote cervical and vaginal mucus. Deficiencies can cause pain with sex, lower libido, and vaginal dryness.

Estradiol is typically available in three forms: oral, as a cream or gel transdermal preparation, or as a prescription patch. Oral estradiol (given as a compounded pill) does pass through liver metabolism first, and in those with liver burdens (think alcohol consumption, sedentary lifestyle, multiple medications, constipation, and exposure to dietary and environmental toxins), there have been studies that show it poses more of a health risk.

By avoiding first-pass metabolism, transdermal hormone therapy may have less pronounced effects on hepatic protein synthesis, such as inflammatory markers, markers of coagulation, and fibrinolysis. In studies, oral estradiol hormone therapy has more pronounced hypercoagulant effects and increases synthesis of C-reactive protein and fibrinolytic markers. This means that there may be an increased risk of clotting and inflammation in the bloodstream for those patients at risk. If my patients are taking oral estrogens, I make sure to test inflammatory and coagulation markers in their bloodstreams regularly.

Both oral and transdermal delivery systems have beneficial effects on high-density lipoprotein cholesterol to low-density lipoprotein cholesterol ratios (oral > transdermal), while the transdermal system has more positive effects on triglycerides. Incidence of metabolic syndrome/insulin resistance and weight gain appears to be slightly lower with a transdermal delivery system. Oral estrogen's significant increase in hepatic sex hormone-binding globulin production lowers testosterone availability compared with transdermal delivery, which may lower libido.[12]

In Summary

In an ideal situation, I typically begin patients on a small amount of bioidentical hormone therapy while beginning to address their overall health, as well as adrenal and thyroid function. Our practice then works extensively to address overall toxicity and lifestyle factors. Many of our menopausal patients do so much to correct their overall health that they can greatly reduce or discontinue their dosing of bioidentical hormones. The bottom line is that there is no need to suffer any negative symptoms during the transition of menopause. A qualified provider with experience and a patient's willingness to follow recommendations make all the difference.

Notes

1. Hartmann E. Effects of L-tryptophan on sleepiness and on sleep. *J Psychiatric Res.* 1982;17(2):107–13.
2. Schneider-Helmert D, Spinweber CL. Evaluation of L-tryptophan for treatment of insomnia: a review. *Psychopharmacology (Berl.)* 1986;89(1):1–7.
3. Gottesmann C. GABA mechanisms and sleep. *Neuroscience.* 2002:111(2):231–239.
4. Cases J et al. Pilot trial of Melissa officinalis L. leaf extract in the treatment of volunteers suffering from mild-to-moderate anxiety disorders and sleep disturbances. *Med J Nutrition Metab.* 2011 Dec;4(3):211–218.
5. Franco L et al. The sedative effects of hops (Humulus lupulus), a component of beer, on the activity/rest rhythm. *Acta Phys Hung.* 2012 Jun;99(2):133–139.
6. Ngan A, Conduit R. A double-blind, placebo-controlled investigation of the effects of Passiflora incarnata (passionflower) herbal tea on subjective sleep quality. *Phytother Res.* 2011 Aug;25(8):1153–1159.
7. Seidlova-Wuttke D, Hesse O, Jarry H, et al. Evidence for selective estrogen receptor modulator activity in a black cohosh (Cimicifuga racemosa) extract: comparison with estradiol-17beta. *Eur J Endocrinol.* October 2003;149(4):351–362.
8. Burdette JE, Liu J, Chen SN, Fabricant DS, et al. Black cohosh acts as a mixed competitive ligand and partial agonist of the serotonin receptor. *J Agric Food Chem.* 2003;51(19):5661–5670.
9. Milligan SR et al. Identification of a potent phytoestrogen in hops and beer. *J Clin Endocrinol Metab.* 1999 Jun;84(6):2249–2252.
10. Tamir S et al. Estrogen-like activity of glabrene and other constituents isolated from licorice root. *J Steroid Biochem Mol Biol.* 2001 Sep;78(3):291–8.
11. Bone KM et al. Vitex agnus castus in the treatment of menopause related complaints. *J Altern Complement Med.* 2009 Aug;15(8):853–862.
12. Goodman MP. Are all estrogens created equal? A review of oral vs. transdermal therapy. *J Womens Health (Larchmt).* 2012 Feb;21(2):161–169.

◆

Dr. Amy Terlisner attended the University of Georgia in Athens, Georgia, where she obtained a BS in holistic medicine, a degree that she customized for her later studies in naturopathic medicine. She graduated summa cum laude (with highest honor) and published an undergraduate thesis in health psychology. Dr. Terlisner then attended Bastyr University in Seattle, Washington. She has an extensive teaching background and has taught physiology, anatomy, clinical laboratory diagnosis, pharmacognosy, physical exam diagnosis, and manipulation at the doctorate level. Her specialties include women's health, cardiovascular disease, gastroenterology, anti-aging medicine, and natural hormone replacement therapy. Dr. Terlisner is the current president of the Arizona Association of Naturopathic Physicians and owns ALETRIS Center of Integrative Medicine, located in Scottsdale, Arizona.

MSA/Shy-Drager Syndrome Responds to Alternative Medicine

Part 3: Long-Term Exposure to Fumes, Pesticides, and Mold May Be Linked to MSA

by S. Colet Lahoz, RN, MS, LAc

This article is part 3 in a series that I have written for the *Townsend Letter* on Shy-Drager syndrome, also known as multisystem atrophy (MSA).[1,2] The first article was regarding a case study done on Al Soeffker, and how my treatment protocol reversed his condition. The second presented my findings on 30 other cases that I had treated since 1999. Both articles were published in the *Townsend Letter* between 1999 and 2005.

Definition and Symptomatology

This is a follow-up article based on a total of 75 patients whom I have seen at the East-West Clinic in White Bear Lake, Minnesota, since 1999. MSA is a neurologic disorder of the autonomic nervous system. It is a rare, progressive disease with symptoms similar to those of Parkinson's disease. It usually develops in individuals aged between 37 and 75 years. MSA is characterized by orthostatic hypotension, bowel and bladder dysfunction, impairment of balance or equilibrium, micrographia, muscle weakness, dysphagia, speech impairment, and in the later stages breathing and swallowing difficulties.

Orthostatic hypotension is an excessive drop in blood pressure when the patient stands up causing dizziness, lightheadedness, and momentary blackouts. Patients are typically suffering from chronic constipation, bladder incontinence, or inability to start urinary flow. Parkinsonian symptoms include muscle rigidity and weakness resulting in slow movements. Handwriting becomes very small and difficult, and speech is weak and slurred and in advanced cases very difficult to understand. Breathing problems with stridor are common along with difficulty swallowing.

Etiology

The cause is unknown and no specific risk factors have been identified except for saxitoxins made by dinoflagellates.[3] My study presents a possible link to long-term exposure to toxic fumes, chemicals, and pesticides as well as dust and mold in the environment. About 70% (52 out of 75) of my patients were exposed to toxins over periods ranging from 6 months to 30 years. These exposures include these examples:

A 60-year-old female who lived in the southern US as a child was exposed to pesticide fumigations done once a month by helicopter. People living in the vicinity were not forewarned and therefore did not take precautions such as wearing masks or not being outdoors on those days. She lived there as a child until she graduated from high school.

A 55-year-old male owned his own asphalt company and did the work for an asphalt company. He did the work himself for at least 39 years.

A 65-year-old male worked all his adult life in the auto industry in Detroit, where he inhaled fumes from paint and other chemicals used in the industry.

A 50-year-old male was exposed to lacquer and paint as cabinetmaker, which was his livelihood for 30 years.

A farmer from Minnesota fumigated with pesticides and fungicides regularly for 20 years and never used a mask.

A 55-year-old female from Florida listed the following agents that she was exposed to: as owner of a beauty salon she was exposed to solutions used to give permanents, aerosol can for hairspray, hair color, and stripper, nail polish remover, and hair bleach. The same patient switched occupations and did building construction and refinishing boats, where she was again exposed to paint, thinner, and stripper. She switched occupations again and sang in a nightclub, where she was exposed to smoke and alcohol and cleaners used for music equipment such as WD-40. Currently she owns a landscaping business and now is exposed to gasoline, fertilizers, malathione, and carburetor cleaners.

The consistency of these conditions within my sample led me to believe that this may be a cause for the nervous system and autonomic dysfunctions that patients then exhibit in later years. I therefore advise readers to take proper precautions

when working in industry or in homes where fumes and environmental chemicals are inhaled on a regular basis. I also hypothesize that these exposures weaken the immune system and allow the subsequent proliferation of a normally harmless fungus known as *Candida albicans*. This leads to a myriad of symptoms including: craving sweets, breads and alcohol; anxiety and depression; increases in allergies, especially digestive and sinus allergies; chronic skin problems; "brain fog"; fatigue; leaky gut; and migraine headaches.

Approximately 55% occurs in men with onset between ages 50 to 60. The overall prevalence is estimated at 4.6 per 100,000 people.[4]

Of the 75 patients whom I have treated, 49 (65%) were male and 26 were female. These patients came to the East-West Clinic from all across the US as well as from other parts of the world. They found information about the clinic through my previous articles published in the *Townsend Letter*. I required a phone consult prior to their visit to the clinic in Minnesota. This allowed me to evaluate the stage of their disease, because in my observation once they are too debilitated, this treatment protocol will not be able to help them. Those in the later stage of MSA I categorized as patients who have to depend on pulmonary assistance in order to breathe, they are no longer able to walk on their own, and their speech is no longer discernible; in other words, they are bedridden and can no longer take care of their basic needs without assistance.

In summary, if I treated patients in the early to moderate stage of the disease, the outcomes were favorable. Those who received treatments in the very early stage had the best response and often when evaluated by their neurologist following their course of treatment here, they were told that their diagnosis of MSA was wrong and they were instead diagnosed to have mild Parkinsonism. These medical doctors are going by the hypothesis that MSA is irreversible and are hesitant to consider that my hypotheses about the etiology and treatment of MSA have merit. As an example, when Soeffker was presented in grand rounds to a group of neurologists at two highly regarded research institutions in the Twin Cities, one of the neurologists wrote me a letter explaining once again that Soeffker must have been diagnosed incorrectly. I wrote him back and said that by the time he came to my clinic he was diagnosed by two different institutes and two different experts confirming MSA.

Case Studies

I am presenting 3 cases with permission from the patients who presented these reports. These cases illustrate a typical response to the treatments provided at the East-West Clinic. Names have been changed to protect privacy.

Case Number 1

The first report was written to me by one of my patients, illustrating my point that medical doctors tend to dismiss the possibility that there is a treatment that could work.

> My name is Jack D. I am 73 years old, I live in Arizona. At age 68, I was still working part time making and installing kitchen cabinets. It was at this time that I felt the early signs of MSA. I had shortness of breath and dizziness. I had to sit down to regain my breath. The lightheadedness was felt more upon standing abruptly. The doctors called this orthostatic hypotension and told me that this is one of the classic signs of MSA. The symptoms slowly increased over the next few months. My family doctor referred me to a neurologist, and after a battery of tests and several other consultations, the doctors all agreed that my diagnosis was MSA. By this time my blood pressure was so out of control, it would drop dramatically and I would have to lie down to regain my composure. I was told that there was not much they could do for my problems. I continued to worsen and could not walk more than a block without becoming short of breath and dizzy. Even the time it took to stand up to brush my teeth was difficult.
>
> I began to search the Internet for any kind of help and found that most articles offered no hope. The most encouraging articles were those written by Colet Lahoz and published in the *Townsend Letter*. I found the website for the East-West Clinic and arranged a phone consult with Colet Lahoz. Shortly after our conversation, I started the change in my diet based on her recommendation. On July 21, 2008, I began my 2-week treatment in Minnesota accompanied by my wife. The clinical evaluation confirmed that I was positive for candidiasis and I started the cleansing and detoxification protocol along with the diet. I received 2 acupuncture treatments a day during those 2 weeks.
>
> On Colet Lahoz's recommendation I continued the candida program at home and found a local practitioner of Traditional Chinese Medicine [TCM] and went for acupuncture treatments twice a week at first; and as I got better, I tapered to once a week. I still go for treatment once a month. I went for another consult with a different neurologist who claimed that I do not have MSA and instead have Parkinson's disease. He prescribed drugs for Parkinson's and this time they helped with the symptoms.
>
> It has been 5 years since my visit at the East-West Clinic; I am now 73 years old. I continue to have blood pressure problems, but most of the time I feel good. I try to go for a walk every day and even play 9 holes of golf from time to time.
>
> I am grateful for the treatments and also for the encouragement given by Colet, who said, "Don't let anyone tell you that you are dying; you are not dying." She was the first to give me hope that I could get better. I still have problems that go with Parkinson's and age, but I am still here and am not progressively deteriorating as was predicted by the doctors who diagnosed me with MSA.

➤

➤

Case Number 2

My name is Jay I am 73 years old and live in Illinois. In 2003, I was playing in a tennis tournament and became completely exhausted and confused in the middle of a match. It was clear that something was wrong, as I also developed faintness, weakness and mild ataxia. Rolling in bed was difficult. I did nothing until 2005, when I began a series of medical tests. I was successfully treated using physical therapy for a frozen shoulder, which we now recognize as a parkinsonian symptom, and had developed a slight tremor in one arm, but it was not until a doctor took my blood pressure lying down, then sitting, then standing, with the pressure dropping at each move, that I was diagnosed as having MSA. That was in 2006.

In 2007 I spent two weeks undergoing therapy with Colet Lahoz and continued the acupuncture and herbal remedies after going home, although I did not alter my diet, which was already low in sugar and carbohydrates, high in vegetables and protein. Salt tablets helped raise my blood pressure, but I eventually stopped taking them as my blood pressure was no longer a big problem – I only fainted once, although my pressure can drop by as much as 100 degrees when I go from lying down to standing up. I have learned that as soon as I feel dizzy, if I sit down only for a few minutes, I recover my equilibrium. I still walk on my own, although slowly, and have had no falls. I tire easily, sleep 13 to 14 hours a day, find all movement difficult but not painful until recently. I still get on the tennis court several times a week, for only a half hour, with someone who can hit the ball to me consistently. Although I take several breaks in my play, I am aware of how much weaker I am. Anyone watching sees that I still have powerful strokes.

I eventually stopped acupuncture, but am getting a massage three times a week, which I find very soothing. A neurologist has prescribed two medications to help with my mental abilities, in addition to Colet's remedies, and although I continue to lose memory and executive function, I still have times of keen insight, quick repartee, and humor. Over the years, I have continued to decline physically and mentally, but very slowly.

Case Number 3

Bob M. is my husband, he is 57 years old, and we live in New York

Bob was misdiagnosed with Parkinson's disease in February 2007 and started on levodopa. Since he did not have much response, we then went to Albany Medical Center's Movement Disorder Center in April 2007. He was placed on the Neupro patch and levodopa. His movements were slow and he occasionally fell. Other symptoms included orthostatic hypotension, loss of equilibrium, urine incontinence, voice weak and slurred, drooling, difficulty swallowing, gassiness, inability to move muscles in face so that he could not smile. On top of that, in October 2007 he had colon cancer. While he was on the operating table, his heart stopped and they had to do CPR to bring him back to life. The good news was that they got all the cancer and he did not need chemotherapy. In 2008 they took Neupro patch off the market, and they put him on Mirapex and levodopa instead. By this time his movements were slower, he fell more frequently, his writing became so small you could not read it, and you could hardly hear him speak.

Bob was an avid road bike rider, and in June 2009 I received a call at work telling me that he had fallen and his blood pressure was 60/40. I told them to get him to the hospital. Upon arrival he stayed for six hours and was then released home. When I called his doctor in Albany, she told me to come right down. When we got there, she said she thought that Bob had multiple systems atrophy. She did more testing and had me take his blood pressure numerous times during the day while lying down and standing up. When he stood up, it went from 130–140/90 to 100–60/60–40.

I went home and looked up *multiple systems atrophy* on the Internet. The Mayo Clinic defines it as a rare neurological disorder that impairs your body's involuntary (autonomic) functions, including blood pressure, heart rate, bladder function, and digestion. It eventually leads to death and there is no treatment for the disorder.

The next thing that I found was Colet Lahoz's articles. I read them and thought they were the only articles that offered us hope. When I called Colet, she said the sooner we could start the treatments, the better. She said that her program had better chances for success when patients were treated with her protocol before the patient was too debilitated. She thought that Bob was at a stage that could possibly get a good outcome. We went to Minnesota on July 19, 2009, and he had acupuncture daily for two weeks. Bob had weaned himself off the levodopa and Mirapex and was only on blood pressure medication and Lasix. After the first week of treatment, Bob's facial expressions had returned. It brought tears to my eyes to see him smile again. His drooling and swallowing were both better.

It is now almost two years since our visit at the East-West Clinic. Since coming home, Bob has retired from his job. He has more energy and some days are better than others. Before his illness he was a ski instructor at a nearby mountain. This past winter, I took him skiing for two or three hours, and he did well. We just got back from a cruise to the eastern Caribbean. We kayaked and went snorkeling, which he really enjoyed. He gets tired more easily and had to take occasional naps, but the trip went well. He is a joyously living and loving life to the fullest.

These reports are typical of many patients when treated at an early in the stage in the disease process. It confirms my assumption that this protocol prevents the classic progression of MSA characterized by rapid debilitation. Families of patients reported that their relatives had a quality of life that they would not have otherwise experienced had they not adhered to my recommendations.

Suggested Protocol

When patients came to the East-West Clinic for acupuncture treatments, they remained for at least 2 weeks and received two treatments per day, one using front points and the other, back points. Thereafter, we suggested that they find a TCM practitioner in their local area to continue with the work started here. We requested this practitioner to support our plan and work with us by phone or by e-mail to set up the best possible program for the patient.

MSA symptoms often include orthostatic hypotension, slurred speech, drooling especially at night, severe constipation, frequent urination, impaired balance, fatigue, poor circulation in legs, episodic dizziness, and inability to sweat. In more advance cases, there may be a severe difficulty with the coughing and gag reflex.

Patients also test high on the candida questionnaire; for this, I put them on my program of antifungals and diet. This information is outlined in chapter 15 of my book *Conquering Yeast Infections: Chronic Illness and the Candida Connection*, which I would recommend that you read to get familiar with this protocol. (It is available by calling 877-401-4757; toll free).[5] I believe that it is the longstanding presence of mycotoxins, especially acetaldehyde, that predisposed these patients to developing these neurological problems. I have seen a lot of other MSA patients since Al Soeffker, and they fit the profile. Patients respond well to this three-pronged protocol of antifungals, diet, and aggressive acupuncture.

Examination from a TCM Perspective

- Check tongue, and 12 pulses.
- Treat pattern of disharmony.

Acupuncture Suggestion

Patients with MSA respond well to aggressive acupuncture. I use as many needles as needed to balance the existing disharmony; in many cases, there is a pattern of chi and yang deficiency. For this I used LI4, Ki7, Sp. 2, St. 36. CV 6 Lu 9. Often I used moxa and electrical stimulation to a couple of pairs.

In addition, I palpate from the base of the skull, all along the spine, all the joints, all big muscle groups and

➤

ligaments, looking for *ah shi* points and areas with obvious chi stagnation. I needle these point as needed; so you can imagine that they do end up with a lot of needles, but they can take it. They may feel more tired after a treatment, but that is OK. They are usually able to sleep it off and feel refreshed when they awaken.

For slurred speech: St. 4, CO 24, GV26, Ht.5, GB20 and Bai hui. (I also use an herbal formula called Di Huang Yin Zi for this problem).

For improvement of swallowing reflex: LI4, 18,17, PE6, CV22, GV 20.

For constipation: LI4,2, UB 38, 25, St. 25, 38 and 40, GB 34. CV 4,5,12, Sp 16.

For improving balance and equilibrium and dizziness: CV6, 10. 17.,18, etc.

For orthostatic hypotension: use moxa and tonify: UB 23, Ren 6, Du11,12, LI 11,12, St.36. Ki 7.

To restore bladder function: I used Sp.6, CV 2,3, Ki11,UB 23, 24, or 25 E stim to a pair.

Most patients show very significant improvements in all areas after the two weeks at the East-West Clinic.

Suggested Herbal Medicine and Vitamins for MSA Patients

Do the five-phase antifungal program as outlined in Chapter 15 of my book *Conquering Yeast Infections*. Stay 3 months on each phase, unless instructed otherwise. (See p. 80 for mixing instruction on phase 1.)

See Chapter 15 of the book for the whole sequence of antifungals to be used.

Follow the anticandida diet, also explained in detail in the book in Chapter 8, p.61

Vitamins: Wellness formula; biotin: 1 a day

Herbal Medicines: *To raise blood pressure*:

Upon awakening, 1 tsp baking soda in a cup of water repeated every 3 hours or as needed to maintain a systolic blood pressure of 100. If more fainting episodes or if blood pressure is not maintained at low normal at this dosage, you may keep increasing by one tsp. in water until you get the dosage that maintains it at 100 /60 more or less with no fainting episodes. This regimen can take the place of drugs for blood pressure. To normalize blood pressure, you can also use *Rauwolfia serpentina*. Available on the Internet; taken as drops.

To improve clarity and quality of voice:

Di Huang Yin Zi: 6 tabs 3 times a day.

Stay with this at least 3 months and then we will evaluate need for reducing dosage for maintenance.

To support brain and nervous system function:

Bu Nao Pian: Herbal brain support (6) 3 times a day with warm water. You can take this with your vitamins.

Choline with inositol: 2 tabs per day.

For bladder incontinence and or frequency of urination:

Du Huo Ji Sheng: Wan 8 pills 3 times daily with warm water. One bottle is supply for one week.

Take this for three months and then we will evaluate your outcomes and I will help decide the next step at that time.

For balance and or dizziness:

Xiao Chai Hu Tang Wan: 8 3 times a day times 3 months, then reevaluate situation.

For tremors:

Tian Ma Gou Teng Wan: 8 3 times a day for 3 months and reevaluate.

For constipation:

Oxycleanse: 2 to 6 per day.

Notes

1. Lahoz C. Shy Drager syndrome/MSA reversal through alternative medicine. Part 1.` *Townsend Lett.* June 2001.
2. Lahoz C. Shy Drager syndrome/MSA reversal through alternative medicine. Part 2. *Townsend Lett.* May 2005.
3. National study seeks cause of baffling, fatal disorder called MSA [online press release]. UCSD Health Sciences Communications Healthbeat. Dec. 5, 2003.
4. According to a study reported in *Prevalence of Rare Diseases: Bibliographic Data*. Orphanet 20. Retrieved November 19, 2009.
5. Lahoz C. *Conquering Yeast Infections: Chronic Illness and the Candida Connection*. East-West Clinic; 2010.

S. Colet Lahoz, RN, MS, LAc
East-West Clinic
White Bear Lake, Minnesota
www.eastwest-mn.com

◆

Colet Lahoz, RN, MS, LAc, founder of the East West Acupuncture Clinic located in White Bear Lake, Minnesota, is a pioneer in the practice of holistic medicine in the US, Ms. Lahoz, completed her master's degree in nursing from the University of Minnesota. She then pursued the study of Traditional Chinese Medicine and has been in private practice since 1984. Her career as a registered nurse included positions in critical care and trauma, pioneering the development of emergency and trauma courses for nurses. She was faculty at the University of Minnesota School of Nursing. She also held the position as director of nursing education at St. Paul Children's Hospital.

The *Townsend Letter* cited her in its May 2005 issue as one of the top practitioners who are cutting-edge sources of information on alternative medicine. She is author of the book *Conquering Yeast Infections: Chronic Illness and the Candida Connection*. The book presents diagnosis and treatment protocols for candidiasis, a condition that leads to many chronic illnesses, autoimmune diseases, and degenerative nervous system conditions. Her research on the successful treatment of MSA, a form of Parkinson's disease, has been published and has since drawn patients from other countries and other states to her clinic. She has recently done seminars on alternative therapies for PTSD.

Gardasil: Child Abuse by Big Pharma

by Gary Null, PhD, and Nancy Ashley

Gardasil, the human papillomavirus vaccine produced by Merck, was brought to market in 2006 with great fanfare, widely proclaimed as the first ever anticancer vaccine. Having gained a strong foothold due to fast-tracking by the FDA and rushed to market ahead of completed safety studies and ahead of its competitor, Gardasil was already an entrenched, recommended vaccine by the time it was approved.[1] Merck created a market for Gardasil out of thin air with deceptive and dishonest advertising, and thereby planted fear in the mind of consumers: fear of an unknown health crisis, an invisible time bomb waiting to explode and harm women everywhere.[2] When criticized for its aggressive marketing, Merck countered that it was performing a public service by raising awareness about the human papillomavirus and wasn't selling anything.[3] Really? This lie became public as Merck was caught lobbying the 50 states for mandatory Gardasil vaccination prior to FDA approval.[4] The fact is that there was never a need for Gardasil in the first place: regular Pap testing had already lowered the incidence of cervical cancer by 80% in the US to a few thousand cases a year, and the vast majority of all HPV infections resolve of their own accord.[5] But by lining the coffers of such groups as Women in Government (WIG), National Foundation for Women Legislators (NFWL), National Conference of State Legislatures (NCSL), and, of course, the American Legislative Exchange Council (ALEC), Merck was able to influence legislation such that almost immediately after the vaccine was approved, it was part of the vaccine schedule recommended for all girls.[6] If it hadn't been for Governor Rick Perry's blatantly self-serving blunder of trying to mandate Gardasil for school attendance in Texas in the face of huge conflict of interest and a $50 million contribution to his presidential campaign, Gardasil might have gone even further.[7]

There is something deeply wrong with a giant pharmaceutical company spending hundreds of millions of dollars to manipulate women and influence legislation in order to generate a revenue stream of billions of dollars a year for itself at the expense of a gullible public. Because what is wrong with Gardasil isn't just that it is unnecessary. Gardasil is possibly the most dangerous vaccine on the market, with the potential to injure, maim, or even kill the children who receive it. The program of coercion to vaccinate every 11- to 26-year-old girl with Gardasil is relentless. This vaccine is given not just in doctor's offices, where doctors have been known to "fire" noncompliant patients, but in schools and colleges, where the pressure on girls and their parents to conform can be extreme. These institutions all have quotas – sometimes including financial rewards – and they are anxious to prove high rates of compliance.[8] But there is no informed consent prior to vaccination, so most of these girls and their parents have no idea what they are risking by agreeing to vaccination with Gardasil. While Merck, the FDA, the CDC and the medical establishment all deny that there have been serious, life-altering adverse events associated with Gardasil, the fact is that compared with the mandated vaccines which are given with greater frequency, Gardasil still has the most adverse events reported to the Vaccine Adverse Event Reporting System (VAERS) of any vaccine. And since reporting of adverse events is not mandatory in the US (although outbreaks of so-called vaccine-preventable illness are), it is likely that only 10% even get reported![9]

And what of the victims of Merck's war on cervical cancer? Alexis Wolf was a normal seventh-grader in 2007. She had type 1 diabetes, but had successfully learned how to give herself insulin shots and eventually graduated to an insulin pump, which she also mastered easily. Alexis made the honor roll for the first time that year, and was rewarded with a trip to Germany over the summer to visit her grandparents. Her endocrinologist believed that the diabetes was under control and thought that Alexis would be perfectly capable of making the trip on her own and managing her diabetes herself. To make sure everything was in order prior to travel, Alexis' doctor recommended that she receive her first Gardasil vaccine.

The trip went well, but Alexis seemed different to her mother when she returned, perhaps a bit distant. Alexis received her second Gardasil vaccine after coming home, and shortly thereafter her personality changed entirely. For a relatively shy girl, Alexis immediately became very gregarious, hugging everyone all the time. But she also became

➤

agitated and troubled, and started having difficulty keeping food down. It reached the point where she threw up a number of times a day, which is especially dangerous for a diabetic. There began a series of appointments with many, many doctors: the GP, the endocrinologist, the cardiologist, the gastroenterologist, and numerous different diagnostic tests. But nothing they did or recommended seemed to help. Alexis was struggling to get through her days, usually carrying a bucket with her at all times just in case. She had terrible insomnia, was eating excessively, and was falling further and further behind in school.

In January 2008, Alexis received her third Gardasil shot – within 2 weeks she was in the hospital. Her behavior had worsened to the point where she was considered bipolar and she was put on a series of antipsychotic medications. Her mother didn't believe that this was a psychological problem. She knew that something else had to be wrong, knew that there had to be some medical explanation for what was going on. After weeks and months in and out of different hospitals with no improvement and her condition growing more desperate, Alexis at long last was seen by a doctor who recognized that she was having seizures – something that all the previous doctors had overlooked. This led to more tests – EEGs, MRI imaging, and spinal taps – and finally a conclusion that seemed to make sense: encephalitis, traumatic brain injury, and seizure disorder. But why? Alexis's mother had an additional conclusion which was so crystal clear in hindsight – her daughter was normal before she received the Gardasil vaccine and had worsened with each one. The Gardasil vaccine had left Alexis with brain damage.

We spoke with Tracy Wolf, Alexis's mother, about their ordeal. While maintaining a cheerful optimism, Tracy admitted that she could never have foreseen how their lives would change completely. After Alexis's seizure disorder was identified and she was put on antiseizure medication, her physical symptoms improved to a certain extent, but she was completely altered. Alexis has deteriorated from being a normal child to one who is only functioning at a fourth-grade level. Forced to enter special education instead of rejoining her previous class, Alexis became enormously frustrated and school became an ordeal for everyone. When Alexis turned 18, Tracy finally gave up and pulled her out of school, realizing that it really could not offer Alexis anything but misery. The stress on their family has been enormous. The pressure caused the Wolfs' marriage to dissolve, and Tracy is now raising both daughters by herself, with their father living in a different state. Alexis needs almost constant supervision, and Tracy can only leave her alone for short periods of time. They have applied for special services that could possibly be helpful, but the waiting list is long. Alexis doesn't understand why things are so different, why her little sister is learning to drive but she can't.[10]

Unlike with other types of injuries, a vaccine victim cannot simply sue the company responsible for the problem. Since 1986, all cases of vaccine injury must be brought to the Office of Special Masters at the US Court of Federal Claims, commonly called the vaccine court. This court was established to create a nonadversarial situation in which children injured by vaccines could receive compensation. But the Department of Health and Human Services has completely distorted the intent of this legislation, and turned it into a highly adversarial proceeding. Injuries listed on a table are supposed to be automatically compensated, but a lot of injuries have been removed from the table over the years, and new vaccines, such as Gardasil, are listed with no specific injuries attributable to them. So the burden is on the victim to prove causation because there is no presumption of any injury.

In conversation with William Ronan, a lawyer retained by Alexis's family, he shared that his law firm currently is handling 12 to 15 Gardasil cases that are being evaluated and another 6 cases already filed in the vaccine court. Interestingly, out of all the types of Gardasil-related injuries, the cases that Ronan represents all fall into two main categories: autoimmune and neurological. When the injuries are neurological, doctors frequently can't put their finger on what is wrong, and end up sending the girls to a psychiatrist. Ronan maintains that it is impossible for all of these girls suddenly to have developed mental problems or simply to be imagining that they have been harmed since receiving the Gardasil vaccine. While not antivaccine himself, he has seen too many girls have serious adverse reactions to Gardasil. He runs a two-person law firm in Kansas City, and without advertising, has received at least 20 to 30 calls regarding Gardasil injuries. Ronan believes that his experience is just the tip of the iceberg – anyone actually advertising legal services for Gardasil victims would be inundated with a huge number of cases.

The work is slow going. Evidence of harm caused by vaccines is crucial, but there aren't a lot of published medical studies about safety to back up this claim. Those that exist are funded by the manufacturer and tend to be overly favorable. Possibly the strongest argument against Merck, according to Ronan, is its failure to warn girls of the risk involved when getting the Gardasil vaccine. Merck clearly knew that this drug could cause neurological dysfunction, yet did not adequately address this in the product insert. Also, it is well known that girls who already have an HPV infection are more likely to be harmed by the vaccine, but the manufacture does not make this clear and does not recommend testing. Ronan summed up his view of vaccinating young girls with Gardasil:

> The real issue is: what is the benefit of this vaccine? Do the benefits outweigh the risks? There

> is a risk of a seizure disorder or an autoimmune disorder versus the benefit that it might reduce cervical cancer. But Gardasil doesn't eliminate the need for regular Pap testing, which is already safe, and there isn't good evidence that it prevents cervical cancer. In evaluating risk and benefit, when all the facts are known it becomes a pretty easy decision – the vaccine is more dangerous than any benefit. Unfortunately, medical professionals tend to read and listen to information provided by the manufacturers, which doesn't adequately present the risks involved, so they actually aren't sufficiently informed to advise their patients.

Ronan's own daughter had to fight off an aggressive attempt by her doctor to get the Gardasil vaccine, so he understands the pressure that girls are under to just go along instead of asking questions.[11]

We interviewed Dr. Meryl Nass, board-certified internal medicine practitioner and vaccine specialist, who agrees that Gardasil was rushed to market without adequate safety testing. Three years after approval for girls, the company likewise received approval to vaccinate boys age 9 and above with no new studies and very little data to justify this action. Regarding Gardasil's adverse effects, Nass said:

> Children don't usually die suddenly when they are healthy but there are certainly lots of teenage girls who have died relatively suddenly after Gardasil or developed severe neurologic reactions. Therefore, if you are going to try to balance safety and efficacy when you prescribe something like a vaccine, you have to know how effective it's going to be. Does this really prevent cervical cancer in young women? And does it prevent it in women who have already been exposed to these viruses? ... So I don't know how other doctors prescribe something like Gardasil ... Basically, they make an assumption that since the FDA has licensed it ... the manufacturer would only market something that's safe, doctors go ahead and prescribe. And what they may not be aware of is that it is extremely hard to link a side effect to a vaccine, for many reasons. Getting a judgment against a manufacturer is very difficult and it has become more difficult due to some recent litigation that reduced manufacturer liability for vaccines in general.[12]

Gardasil's doctrine is already so entrenched after only six years that it is a formidable task to challenge the official story that this vaccine is safe and effective, because the truth is too unsettling. The remarkable claims of Gardasil's benefits to women in the war on cancer are full of holes and not supported by the science, even that science funded by Merck

➤

itself. It is important to deconstruct the falsehoods and half-truths that masquerade as facts about Gardasil.

- There is *no* human papillomavirus health crisis.

Cervical cancer in the US has been at record lows for the past two decades. Currently only an estimated 3600 women die of cervical cancer each year. The spectacular success in lowering the death rate from cervical cancer can be attributed to annual Pap screening – between 1955 and 1992, deaths from cervical cancer declined 74% and continue to decline annually by 4%. [13] Part of the success of Pap screening lies in the fact that cervical cancer, unlike most other cancers, is very slow growing. With screening, there is ample opportunity to catch and successfully treat cervical cancer before it gets out of hand. It would be unlikely, then, for any further treatment to improve upon this already very low rate of cervical cancer death.

- Human papillomavirus infection *does not* usually lead to cancer

It is estimated that virtually all women in the US experience a series of human papillomavirus infections throughout their lifetimes. What the makers of Gardasil try to hide is the well-documented fact that 90% of all HPV infections go away of their own accord within 2 years without causing any disease and with no treatment or intervention of any kind.[14]

- Gardasil *does not prevent* cancer.

The end point of all the efficacy studies for Gardasil was not, in fact, prevention of cancer. Researchers couldn't actually assess the development of cervical cancer following the vaccine because it normally takes 20 to 40 years to develop and their studies stopped after 5. So instead, Merck's scientists decided that the presence of atypical cervical cells was a valid "surrogate end point," or substitute for cancer. They used this hypothesis despite the fact that there is no evidence that the types of cervical lesions they chose as their end point would eventually lead to cancer.[15] *Merck has never acknowledged that its entire premise for the efficacy of Gardasil rests on pure speculation.* In fact, many if not most atypical cervical cells resolve on their own without intervention.[16]

- Gardasil is *not* 98% effective at preventing high-grade cervical lesions.

Results of Merck's efficacy study published in a 2007 article in the *New England Journal of Medicine* claim that Gardasil is 98% effective at preventing high-grade cervical lesions. But the article itself reveals that Merck manipulated the data by excluding women and girls who did not follow the exact protocol. When all women in the study were considered, vaccine efficacy dropped to 44%. But even these numbers only actually reflect cervical lesions associated with HPV 16 and 18. When Merck looked at Gardasil's ability to prevent all cervical lesions, Gardasil was only 17% effective![17] And again, its definition of "effective" rests solely on the unfounded assumption that certain types of cervical lesions turn into cancer.

More damning is *Merck's own acknowledgement* that in its controlled studies, a percentage of girls actually developed serious cervical lesions following Gardasil. The vaccine seemed to cause the most lesions in girls with preexisting HPV 16 or 18 infections, but also in girls who had no preexisting HPV infections.[18] At the very least, screening girls for HPV 16 or 18 infections would give HPV-positive girls the chance to avoid developing cervical lesions by declining the vaccine. Yet not only does Merck *not* recommend testing for HPV prior to vaccination with Gardasil, it has actually discouraged this practice, presumably so as not to draw attention to the danger.[19] Anything to maintain the fantasy that this is a safe and effective vaccine.

- Gardasil *does not prevent* human papillomavirus.

Gardasil is designed to prevent only 4 HPV strains: 16 and 18, which can cause cervical cancer, and 6 and 11, which can cause genital warts. However, there are 150 other types of HPVs, at least 15 of which can cause cancer, and Gardasil provides no protection against these other strains.[20,21] Does Merck's so-called consumer education ever mention any of this? Of course not. Why would you have your daughter vaccinated if you knew that the protection was so limited?

Vaccine manufacturers don't appear to consider that the human body, the immune system, and the world of viruses are in a constant state of seeking balance. While Gardasil may lower the incidence of these four particular HPV strains, there are numerous examples wherein vaccines – such as *Haemophilus influenzae* type B, which targets only one or two bacterial strains out of hundreds that exist – have actually created an increase in previously underrepresented strains.[22] How does Merck know that the same thing won't happen with Gardasil?

- Vaccinating prepubescent girls with Gardasil *will not protect* them against HPV or cervical cancer.

Despite the sanctimonious advertising which suggests that both mothers and daughters can empower themselves through Gardasil, Merck's own studies show that the vaccine is only effective for 5 years.[23] So if your 11-year-old daughter gets the Gardasil vaccine, it will have stopped working by the time she is 16. But since Merck doesn't give out this information voluntarily, these girls and their mothers will be in the dark.

- Gardasil vaccination does not eliminate the need for annual Pap screening.

In portraying Gardasil as a treatment that will prevent 98% of cervical cancer, the strong implication is that vaccinated girls will no longer be at risk of cervical cancer at all. As we have already seen in Finland, this can lead to the false assumption that there is no longer a need for annual Pap testing. When women in Finland stopped getting Pap screens, cervical cancer increased to 4 times the incidence in only 5 years![24] This complacency about risk, started and fostered by Gardasil advertising, is also likely to lead to an actual increase in cervical cancer in the US as more females receive the vaccine and stop taking actions that have been proved to be protective.

- There is *no evidence* that Gardasil is effective in boys at preventing genital warts and anal cancer.

Merck's study of HPV vaccine efficacy in males published in the *New England Journal of Medicine* states that Gardasil is 89% effective against genital warts and 75% effective against anal cancer. Given the fact that there are approximately 300 annual deaths from of anal/rectal cancer among men in the US, one wonders how Merck was able to prove such a huge reduction in such a rare problem. As with the female group, external lesions substituted for actual cancer with no proof that lesions of that type actually lead to cancer at all. Yet, Merck's statistics regarding cancer substitute penile/perianal/perineal intraepithelial neoplasia (PIN) listed in the appendix to the article show that in men who did not have HPV prior to vaccination, both the vaccinated group and the placebo group had the same number of these types of lesions, making the observed efficacy of Gardasil minus 98%! And for HPV strain 18-related genital lesions, there were actually more lesions in the vaccinated group than the placebo group. So as in the previous study, Merck's impressive numbers for the efficacy of Gardasil in men can only be attained by excluding one-quarter of the study participants. When everyone is included and all outcomes are assessed, the efficacy drops to zero![25]

- Gardasil *is not safe*.

Most significantly, Gardasil has been associated with an unacceptable number of serious, life-altering adverse events following vaccination. According to World Health Organization data, the rate of serious adverse reactions reported to the VAERS system is 2.5 times higher than the current age-standardized death rate from cervical cancer. VAERS data show that Gardasil has been associated with 24,184 adverse effects since its debut in June 2006, ➤

➤

including seizures, anaphylaxis, paralysis, transverse myelitis, Lou Gehrig's disease (ALS), acute disseminated encephalomyelitis (ADEM), opsoclonus-myoclonus syndrome (uncontrollable movement of the eyes back and forth and jerking movements of the extremities), brachial neuritis, loss of vision, postural tachycardia syndrome, facial palsy, deep vein thrombosis, pulmonary embolism, chronic fatigue syndrome, blindness, pancreatitis, speech problems, short-term memory loss, miscarriage, multiple sclerosis, autoimmune disorders, Guillain-Barré syndrome, abnormal Pap smears, and even cervical cancer.[26–28] *Yes, you read that correctly – VAERS reports 41 cases of cervical cancer following vaccination with Gardasil.* Also, while Merck has not made pregnancy a contraindication for Gardasil vaccination, recent data released by VAERS reveal that Gardasil is *by far* the most dangerous vaccine to receive while pregnant, having caused more than 1300 adverse reactions in its five year existence compared with the next most dangerous vaccine frequently given to pregnant women, the flu vaccine, which has caused 200 adverse events over the past 20 years. Gardasil vaccination while pregnant has also been associated both with frequent miscarriage and a high rate of birth defects.[29] *But most tragically, as of November 2011, 4 more deaths were added to the Gardasil toll, bringing the tally to 108 deaths due to the Gardasil vaccine.* [30]

A vaccine against human papillomavirus was completely superfluous to women's health from its inception. As if the unreasonable risk associated with this vaccine weren't enough, Gardasil is also the most expensive recommended vaccine on the market at $120 to $150 per injection and three required doses. If this vaccine becomes mandated for school attendance, how are poor people and the uninsured to come up with the money? And as funding for government programs dries up, does it make any sense to take limited state health care dollars to vaccinate Medicaid-eligible girls instead of using the money for something that actually might be of benefit? Since the ACIP arm of the FDA already approved Gardasil in 2007 for inclusion in the Vaccination for Children (VFC) program, which provides free immunizations to about 40%-45% of children in the US due to their low income status, Merck's siphoning off of money from other health concerns is poised to become a reality. Vaccination of every 11- and 12-year-old girl in the US with three doses of Gardasil in order to attend school would cost $1.5 billion. To vaccinate these girls for a lifetime once word gets out that the vaccine is only effective for five years would cost $7.7 billion.[31] Will there be any money left over for anything else, like Pap screening for poor women? Does this really seem like a good use of limited resources? Only to Merck and its well-compensated allies.

India banned the HPV vaccine a year ago due to vaccine-related deaths.[32] France no longer permits advertising for Gardasil or Cervarix.[33] So why hasn't the FDA, the CDC, the American Academy of Pediatrics, or Merck itself responded to the VAERS reports that Gardasil is not a safe vaccine? The argument, which is the same defense used by all the drug companies and government agencies against any adverse reaction to any vaccine, is that since the VAERS system uses voluntary, passive reporting, it does not prove that a sudden health problem – or even death – occurring after vaccination was in fact caused by the vaccine. The only causal relationships acceptable to the powers that be are those that result from scientific studies. But these are often unacceptable to the rest of us, since the majority are funded by the pharmaceutical companies themselves. So the fix is in. What can any injured child or concerned parent do in the face of this hard line – should they be required to set up their own scientific study? Obviously, neither Merck nor our own government are willing to spend money to prove that Gardasil is in fact dangerous – it is much simpler and infinitely more lucrative to just ignore the allegations and try to portray the victims as conspiratorial whiners. Instead we get studies published in peer-reviewed journals, such as "HPV Immunization in Adolescent and Young Adults: a Cohort Study to Illustrate What Events Might be Mistaken for Adverse Reactions," from a lead author who received funding from Sanofi Pasteur (which partners with Merck for vaccines outside of the US) and GlaxoSmithKline (makers of the HPV vaccine Cervarix), while the other two authors received support from both Merck and GlaxoSmithKline.[34] Sounds like objective science, right? Remember, Merck is the same company that intentionally kept the cardiac risks associated with Vioxx secret while aggressively advertising the product directly to consumers. The same company that so effectively *fabricated* a supposedly peer-reviewed journal to support Vioxx that even doctors couldn't tell it wasn't real – the *Australasian Journal of Bone and Joint Medicine*.[35] Merck let 60,000 Americans die from Vioxx-related heart attacks before finally pulling the drug from the market when it could no longer deny the truth, and cold-bloodedly set aside $1.6 billion with the intention of fighting every claim for damages.

The CDC and the FDA maintain that Gardasil is an important cervical cancer prevention tool that could protect the health of millions of women. But the facts show that the opposite is true: in fact, Gardasil vaccination is not justified by the health care benefits – which are highly questionable and largely fraudulent – nor is it even economically feasible. Yet the lure of the money appears irresistible and seems to be clouding the thinking of everyone in a position to say no to the creeping, relentless advance of Gardasil. It is up to us, the victims, the parents, and the concerned friends and neighbors.

We have to get the message out to as many people as we can and flood our legislators with notice that this vaccine is dangerous, should not be given to anyone, and at the very least cannot be mandated for school attendance.

Tracy Wolf carries enormous guilt, blaming herself for ever agreeing to let Alexis get the Gardasil vaccine. She believed that she was doing the right thing, doing what Alexis's doctors had recommended. Too late, she realized that the doctors really didn't know any more about this vaccine than she did. Tracy is now an advocate for informed consent. She tries to share her story with anyone who will listen to prevent this type of injury from happening to anyone else's daughter. To all parents being asked to vaccinate their daughters – or even sons – with Gardasil, Tracy has this to say: "Please do your homework. Please educate yourself about the risks of this vaccine. The risk of cervical cancer is so low and the success of regular Pap testing has been so great that there really is no need for this vaccine at all. There is no going back once your child has brain damage."

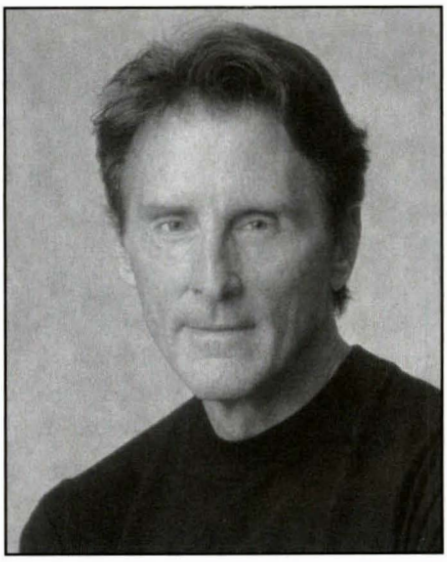
Notes

1. Siers-Poisson J. The politics and PR of cervical cancer, part II: research, develop, and sell, sell, sell [online article]. PR Watch. June 30, 2007. http://prwatch.org/node/6207. Accessed Dec. 27, 2011.
2. Herskovits B. Brand of the year. February 1, 2007. *Pharmaceutical Executive*. Available at http://www.pharmexec.com/pharmexec/Articles/Brand-of-the-Year/ArticleStandard/Article/detail/401664. Accessed December 26, 2011.
3. Zimm A, Blum J. Merck promotes cervical cancer shot by publicizing viral cause [online article]. Bloomberg. May 26, 2006. http://www.bloomberg.com/apps/news?pid=newsarchive&sid=amVj.y3Eynz8. Accessed December 27, 2011.
4. Pettypiece S, Zimm A. Merck stops campaign to mandate Gardasil vaccine use [online article]. Bloomberg. February 20, 2007. http://www.bloomberg.com/apps/news?pid=newsarchive&sid=atbGQuDYx7_c. accessed December 30, 2011.
5. Bevington C. Researcher, Diane Harper, blasts Gardasil HPV marketing [online article]. Off the Radar. http://offtheradar.co.nz/vaccines/53-researcher-diane-harper-blasts-gardasil-hpv-marketing.html. Accessed September 15, 2011.
6. Siers-Poisson J. The politics and PR of cervical cancer, part III: women in government, Merck's Trojan horse [online article]. PR Watch. July 18, 2007, http://prwatch.org/node/6232. Accessed Dec. 27, 2011.
7. Lenzer J. Should boys be given the HPV vaccine? The science is weaker than the marketing [blog entry]. *Discover*. November 14, 2011. http://blogs.discovermagazine.com/crux/2011/11/14/should-boys-be-given-the-hpv-vaccine-the-science-is-weaker-than-the-marketing. Accessed December 27, 2011.
8. Levatin J. Why do doctors push vaccines? [online article]. Tenpenny Integrative Health Center/ December 24, 2011. http://tenpennyimc.com/2011/12/24/why-do-doctors-push-vaccines. Accessed January 3, 2011.
9. Tomljenovic L, Shaw CA. Human papillomavirus (HPV) vaccine policy and evidence-based medicine: are they at odds? *Ann Med*. December 22, 2011. Available at http://informahealthcare.com/doi/abs/10.3109/07853890.2011.645353. Accessed December 23, 2011.
10. Interview with Tracy Wolf. January 3, 2012.
11. Interview with William Ronan. January 5, 2012.
12. Interview with Meryl Nass. January 5, 2012.
13. Bevington C. Op cit.
14. Cervical cancer [Web page]. American Cancer Society. http://www.cancer.org/cancer/cervicalcancer/index. Accessed October 15, 2011.
15. Rothman SM, Rothman DJ. Marketing HPV vaccine: implications for adolescent health and medical professionalism. *JAMA*. 2009;302(7);781–786.
16. Tomljenovic L, Shaw CA. Op cit.
17. Lenzer J. Op cit.
18. Tomljenovic L, Shaw CA. Op cit.
19. Erickson N. Dr. Sin Hang Lee: A case study in ethics don't pay [blog entry]. Sane Vax Inc. http://sanevax.org/dr-sin-hang-lee-a-case-study-in-ethics-dont-pay. Accessed October 15, 2011.
20. Human papillomaviruses and cancer [online document]. National Cancer Institute. September 7, 2011. http://www.cancer.gov/cancertopics/factsheet/Risk/HPV/print. Accessed January 3, 2012.
21. Haug CJ. Human papillomavirus vaccination – reasons for caution. *N Engl J Med*. August 21, 2008;359:861–862.
22. Rubach MP. Increasing incidence of invasive Haemophilus influenzae disease in adults, Utah, USA. *Emerg Infect Dis*. September 2011;17(9). http://wwwnc.cdc.gov/eid/article/17/9/10-1991_article.htm. Accessed October 16, 2011.
23. Tomljenovic L, Shaw CA. Op cit.
24. Ibid.
25. Lenzer J. Op cit.
26. Examining the FDA's HPV vaccine records [online document]. Judicial Watch. June 30, 2008. http://www.judicialwatch.org/documents/2008/JWReportFDAhpvVaccineRecords.pdf. Accessed September 16, 2011.
27. VAERS: Vaccine Adverse Event Reporting System [website]. vaers.hhs.gov/index. Accessed October 14, 2011.
28. Botha LC. New death post-Gardasil updated VAERS figures & report that HPV vaccines adverse reactions are 50% higher than other age-related recommended vaccines [blog entry]. November 29, 2011. Sane Vax, Inc. http://sanevax.org/new-death-post-gardasil-updated-vaers-figures-report-that-hpv-vaccines-adverse-reactions-are-50-higher-than-other-age-related-recommended-vaccines. Accessed December 4, 2011.
29. Rubin S. Pregnant women and vaccines [blog entry]. National Vaccine Information Center. October 2011. http://medalerts.org/analysis/archives/394. Accessed December 30, 2011.
30. Botha L. VAERS Reports with Percentage Increase [blog entry]. Sane Vax, Inc. http://sanevax.org/november-14-2011-vaer-reports-with-percentage-increase. Accessed December 27, 2011.
31. Siers-Poisson J. Op cit.
32. Englund C. India has suspended the use of HPV Gardasil vaccines due to deaths. American Chronicle. April 11, 2010. http://www.americanchronicle.com/articles/view/150425. Accessed December 27, 2011.
33. England C. France says "no" as they ban Gardasil ads. Sane Vax, Inc. January 11, 2011. http://offtheradar.co.nz/vaccines/224-france-says-qnoq-as-they-ban-gardasil-ads.html. Accessed December 28, 2011.
34. Siegrist C et al. Human papilloma virus immunization in adolescent and young adults: a cohort study to illustrate what events might be mistaken for adverse reactions. *Pediatric Infect Dis J*. 2007 Nov;26(11):979–984.
35. Grant B. Merck published fake journal. *Scientist*. 30th April 2009. http://classic.the-scientist.com/blog/display/55671. Accessed December 15, 2011.

◆

Gary Null is the host of the nation's longest-running public radio program, the *Gary Null Show*, and founder of the web-based Progressive Radio Network. A journalist and *New York Times* best-selling author who has written over 70 books on nutrition, health, and sociopolitical issues, Gary has received critical acclaim as director and producer of multi-award-winning documentaries, most recently *Death by Medicine* (2011) and *Knocking on the Devil's Door* (2011).

Nancy Ashley is a freelance writer and researcher who regularly collaborates with Gary Null and Associates.



Alpha-Lipoic Acid

by Thomas E. Levy, MD, JD

Overview

Alpha-lipoic acid, or just lipoic acid (LA), is a unique and potent antioxidant. It can deliver antioxidant activity in both fat- and water-soluble media, and it is capable of having an antioxidant effect in both its oxidized (LA) and reduced (DHLA [dihydrolipoic acid]) forms (Goraca et al. 2011). This effectively allows LA to deliver its antioxidant effect to any cell or tissue type, as well as to any subcellular compartment, in the body (Packer et al. 1997; Rochette et al. 2013). It appears to be particularly effective in recharging enzymes in the mitochondria, the "energy centers" of the cells (Arivazhagan et al. 2001).

While vitamin C and glutathione are absolutely essential to good health, LA can be considered a master antioxidant *orchestrator*, facilitating the optimal interactions among the other antioxidants. DHLA directly recharges vitamin C and indirectly recharges vitamin E. LA also increases intracellular glutathione levels (Kleinkauf-Rocha et al. 2013) and coenzyme Q10 levels. LA administration has been documented to increase intracellular glutathione levels by as much as 70%, and this bolstering of glutathione has been seen both in vivo and in vitro (Han et al. 1995). Reduced LA (DHLA) can regenerate glutathione from its oxidized counterpart, and LA can also help provide the cysteine needed for the synthesis of glutathione. Furthermore, LA administration increases vitamin C levels inside the cells (Shay et al. 2009)

In reviewing the medical literature, it is important to note the many different names ascribed to LA, so that it can be better realized all that LA has been documented to do. These synonyms include, but are still not completely limited to, thioctic acid, 6,8-thioctic acid, 6,8-dithioctane acid, 1,2-dithiol-3-valeric acid, lipoate, and α-lipoic acid. This article will only use the names LA for the oxidized form and DHLA for the reduced form.

Biochemical Properties

DHLA, the reduced form of LA, is capable of exerting an antioxidant effect directly by donating electrons to a prooxidant or an oxidized molecule. It can regenerate reduced vitamin C (ascorbic acid) from dehydroascorbic acid (oxidized ascorbic acid), and it can indirectly regenerate vitamin E back from its oxidized state (Scholich et al. 1989). As well, LA metabolites have been shown to have anti-inflammatory (antioxidant) effects (Kwiecien et al. 2013).

Uniquely, even LA, the oxidized form of DHLA, can exert an antioxidant effect. But this does not mean there is any donation of electrons by LA to an prooxidant or oxidized molecule, since there are none to give. However, it has been documented that LA can inactivate free radicals, which is a significant antioxidant effect (Packer et al. 2001). Also, the ability of LA to chelate metals can produce an antioxidant effect (Ghibu et al. 2009). And just like reduced vitamin C, DHLA can exert a prooxidant effect by donating its electrons for the reduction of iron, which can then break down peroxide to the prooxidant hydroxyl radical via the Fenton reaction (Packer et al. 1994). So, depending upon the microenvironment in which it is found, LA and its reduced partner, DHLA, can promote antioxidation or oxidation.

LA has been to show to effectively chelate toxic metals directly, and it also indirectly strongly supports the chelation of metals by its ability to increase glutathione levels inside the cells. Glutathione and its associated enzymes play important roles in the ability of the body to chelate and excrete a wide variety of toxins, toxic metals included. Metals known to form complexes directly with LA and DHLA include manganese, zinc, cadmium, lead, cobalt, nickel, iron, copper, cadmium, arsenic, and mercury.

The use of LA in the detoxification of individuals with high levels of mercury is not a straightforward situation clinically, however. Some evidence exists that LA can redistribute the heavy metals that it binds to other tissues under the right clinical circumstances. What these circumstances are is not always clear, and a long-term detoxification program containing LA should be monitored by a knowledgeable health-care practitioner. Certainly, unlike many other antioxidant supplements, a good clinical response to a smaller dose of LA does not always mean that more is better.

LA should always be taken in light of how one feels. While most individuals will respond very well right from the start, a supplementing individual who feels unwell after LA supplementation needs either to discontinue it or to consult with a practitioner experienced in detoxification protocols. There is no denying the long-term benefits of LA

for most people (see list below), but everyone is not the same, and caution needs to be exerted when a positive clinical response is not seen at the outset of supplementation (Patrick 2002).

While humans are capable of synthesizing LA from fatty acids and cysteine, the amounts are very small at best (Carreau 1979). To realize the now well-established benefits of LA, enough must be taken in from outside sources (Packer 1998). Although LA is present in both animal and plant sources, some form of supplementation needs be taken to reliably realize these benefits. It has been estimated that 200 to 600 mg LA supplements effectively deliver up to 1000 times more LA that can be obtained from most diets (Singh and Jialal 2008).

LA is rapidly absorbed after a single oral dose ranging between 50 and 600 mg. It is also very rapidly cleared, as its half-life in plasma is only 30 minutes (Breithaupt-Grogler et al. 1999). This rapid clearance reflects both transport into tissues as well as renal excretion (Harrison and McCormick 1974). However, the absolute amount absorbed has been variable and incomplete, ranging between 20% and 40% in one study. Food also impaired the absorption of supplemented LA (Teichert et al. 1998). LA is primarily metabolized in the liver, an organ for which LA has been shown to lessen the negative effects of a variety of toxic agents (Saad et al. 2010; Tabassum et al. 2010).

Clinical and Laboratory Effects

LA has been documented to have positive effects on a wide variety of clinical conditions, which is completely consistent with its antioxidant, selective prooxidant, and metal/toxin chelation properties. Any condition with increased oxidative stress can be expected to respond favorably to LA administration (Harding et al. 2012). These effects and conditions include the following:

1. anti-aging (McCarty et al. 2009; Bagh et al. 2011; Jiang et al. 2013)
2. decreased oxidative stress (Li et al. 2013)
3. improved memory (Stoll et al. 1993)
4. depression (Silva et al. 2013)
5. antitoxin (Ozturk et al. 2013; Sokolowska et al. 2013); toxic mushroom poisoning (Bustamante et al. 1998); prevention against lead toxicity (Flora et al. 2012); lessened cisplatin-induced toxicity (Hussein et al. 2012)
6. alcoholism (Ledesma and Aragon, 2013; Peana et al. 2013)
7. ulcerative colitis (Trivedi and Jena, 2013)
8. cataract prevention (Ou et al. 1996; Li et al. 2013)
9. diabetes and its complications (Bajaj and Khan, 2012; Nebbioso et al. 2013); suppression of hyperinsulinemia and insulin resistance (Ozdogan et al. 2012)
10. anti-inflammatory (Kwiecien et al. 2013)
11. antiproliferative effects in cancers (Feuerecker et al. 2012; Kapoor 2013; Michikoshi et al. 2013)
12. prevention of malignant transformation (Kumar et al. 2013)
13. decreased myocardial infarct size and myocardial protection (Deng et al. 2013)
14. lessened bone loss in osteoporosis (Mainini et al. 2012; Polat et al. 2013)
15. decreased ectopic calcification (Kim et al. 2013)
16. glaucoma (Filina et al. 1995)
17. interruption of HIV replication (Baur et al. 1991; Fuchs et al. 1993; Patrick, 2000)
18. hypertension (high blood pressure; Vasdev et al. 2011)
19. neuroprotection (Ji et al. 2013; Sayin et al. 2013)
20. erectile dysfunction (Mitkov et al. 2013)
21. low back pain (Battisti et al. 2013)
22. lessened weight gain and obesity (Prieto-Hontoria et al. 2009; Seo et al. 2012)
23. neuropathic pain (Mijnhout et al. 2010)
24. prevention of fatty liver disease (Jung et al. 2012; Kaya-Dagistanli et al. 2013)
25. prevention of damage to DNA (Unal et al. 2013)
26. protection against NSAID-induced gastric damage (Kaplan et al. 2012)
27. lessened evolution of diabetic cardiomyopathy (Lee et al. 2012)
28. synergistically increases the tumor-killing effects of vitamin C in the treatment of cancer (Casciari et al. 2001)
29. effective treatment in advanced cancer in humans (Berkson et al. 2009)
30. effective monotherapy for cancer in mice (Al Abdan 2012)
31. protection against radiation damage in a palladium complex (Ramachandran et al. 2010)

Safety

No defined toxic level or upper limit for consumption has been established for LA in humans. However, unlike an antioxidant like vitamin C, LA does reliably show toxicity in animals at very high levels of intake. As discussed above, the multiple potential effects of LA in the body, including the binding and possible redistribution of toxic metals, make individualized dosing and clinical follow-up a reasonable approach. The stored toxin profile and its response to a regular intake of LA will always be a factor that differs from one person to the next.

In rats, an LD50 of 2000 mg/kg of body weight was observed. This means at this dosage level, 50% of the rats died. In humans, such a dose would range from about 100,000 mg for a small woman to about 200,000 mg for a large man, even though such toxicity cannot be reliably extrapolated from the animal study. Supplemental dosing and intravenous

➤

dosing of LA have never remotely approached these levels. Clinical trials in humans have given daily doses of 1800 and 2400 mg daily for extended periods with no evidence of adverse effects (Goraca et al. 2011).

Liposome-Encapsulated Lipoic Acid

When the regular form of LA is supplemented, the absorption is rapid but incomplete, and the half-life in the plasma is very short, as noted above. As with other liposome-encapsulated preparations, liposome-encapsulated lipoic acid (LELA) will have the additional characteristics of this delivery system. Absorption will be virtually complete, no loss of payload will result from gastrointestinal acid or digestive enzymes, and no energy consumption should occur while it is assimilated, ultimately into the cytoplasm of cells throughout the body. Regular LA utilizes an energy-dependent transport across intestinal cells (Takaishi et al. 2007). LA also appears to use a Na^+-dependent multivitamin transporter to go from the blood plasma into tissues (Shay et al. 2009; Ohkura et al. 2010; de Carvalho and Quick 2011).

While there is a sizable body of evidence on liposomes in general, and there is a growing body of evidence on the especially striking benefits of a nutrient such as vitamin C in a liposome-encapsulated form, there does not yet exist an accumulated body of evidence on the benefits of LELA. The lack of energy consumption by the liposome delivery system in LELA is always desirable. Also, the ability of liposomes to penetrate into subcellular compartments should make LELA an especially useful supplement, as it is the mitochondria inside the cells that concentrate and use the most LA. A possible additional benefit of LELA is that it effectively makes the contained LE a "sustained-release" formulation. Regular LE gets cleared rapidly from the plasma, a significant amount of which is excreted into the urine. LELA would be expected to get substantially more of the ingested LE inside the cells throughout the body.

Multiple older studies have asserted that regular LE has no problem crossing the blood–brain barrier. A recent study now asserts that LA does not cross the blood–brain barrier readily, even though the brain does end up receiving significant antioxidant benefit from any administered LA (Chng et al. 2009). The unique bioavailability of LELA might prove to be especially useful in brain and neurological disorders.

A final note would be to reemphasize that LA has many different effects inside the body, most of them extraordinarily positive, as the list of LA effects above demonstrates. However, LA is a powerful detoxifier, and anyone who experiences undesirable symptoms after taking LELA or regular LA should not continue it without the guidance of a health-care practitioner experienced in dealing with patients on detoxification regimens.

References

Al Abdan M. Alpha-lipoic acid controls tumor growth and modulates hepatic redox state in Ehrlich-ascites-carcinoma-bearing mice. *Sci World J.* 2012:509838. PMID: 23002387.

Arivazhagan P, Ramanathan K, Panneerselvam C. Effect of DL-alpha-lipoic acid on mitochondrial enzymes in aged rats. *Chem Biol Interact.* 2001;138:189–198. PMID: 11672700.

Bagh M, Thakurta I, Biswas M, et al. Age-related oxidative decline of mitochondrial functions in rat brain is prevented by long term oral antioxidant supplementation. *Biogerontology.* 2011;12:119–131. PMID: 20857196.

Bajaj S, Khan A Antioxidants and diabetes. *Ind J Endocrinol Metab.* 2012;16:S267–S271. PMID: 23565396.

Battisti E, Albanese A, Guerra L, et al. Alpha lipoic acid and superoxide dismutase in the treatment of chronic low back pain. *Eur J Phys Rehab Med.* Epub July 9, 2013. PMID: 23860422.

Baur A, Harrer T, Peukert M, et al. Alpha-lipoic acid is an effective inhibitor of human immune-deficiency virus (HIV-1) replication. *Klin Wochenschr.* 1991;69:722–724. PMID: 1724477.

Berkson B, Rubin D, Berkson A. Revisiting the ALA/N (alpha-lipoic acid/low-dose naltrexone) protocol for people with metastatic and nonmetastatic pancreatic cancer: a report of 3 new cases. *Integr Cancer Ther.* 2009;8:416–422. PMID: 20042414.

Breithaupt-Grogler K, Niebch G, Schneider E, et al. Dose-proportionality of oral thioctic acid—coincidence of assessments via pooled plasma and individual data. *Eur J Pharm Sci.* 1999;8:57–65. PMID: 10072479.

Bustamante J, Lodge J, Marcocci L, et al. Alpha-lipoic acid in liver metabolism and disease. *Free Radic Biol Med.* 1998;24:1023–1039. PMID: 9607614.

Casciari J, Riordan N, Schmidt T, et al. Cytotoxicity of ascorbate, lipoic acid, and other antioxidants in hollow fibre *in vitro* tumours. *Br J Cancer.* 2001;84:1544–1550. PMID: 11384106.

Carreau J. Biosynthesis of lipoic acid via unsaturated fatty acids. *Methods Enzymol.* 62:152–158. PMID: 374970.

Chng H, New L, Neo A, et al. Distribution study of orally administered lipoic acid in rat brain tissues. *Brain Res.* 2009;1251:80–86. PMID: 19046949.

de Carvalho F, Quick M. Surprising substrate versatility in SLC5A6: Na+-coupled I-transport by the human Na+/multivitamin transporter (hSMVT). *J Biol Chem.* 2011;286:131–137. PMID: 20980265.

Deng C, Sun Z, Tong G, et al. α-Lipoic acid reduces infarct size and preserves cardiac function in rat myocardial ischemia/reperfusion injury through activation of PI3K/Akt/Nrf2 pathway. *PLoS One.* 2013;8:e58371. PMID: 23505496.

Feuerecker B, Pirsig S, Seidl C, et al. Lipoic acid inhibits cell proliferation of tumor cells *in vitro* and *in vivo*. *Cancer Biol Ther.* 2012;13:1425–1435. PMID: 22954700.

Filina A, Davydova N, Endrikhovskii S, Shamshinova A. Lipoic acid as a means of metabolic therapy of open-angle glaucoma. [In Russian.] *Vestn Oftalmol.* 1995;111:6–8. PMID: 8604540.

Flora G, Gupta D, Tiwari A. Toxicity of lead: a review with recent updates. *Interdiscip Toxicol.* 2012;5:47–58. PMID: 23118587.

Fuchs J, Schofer H, Milbradt R, et al. 1993; Studies on lipoate effects on blood redox state in human immunodeficiency virus infected patients. *Arzneimittelforschung.* 43:1359–1362. PMID: 8141828.

Ghibu S, Richard C, Vergely C, et al. 2009; Antioxidant properties of an endogenous thiol: alpha-lipoic acid, useful in the prevention of cardiovascular disease. *J Cardiovasc Pharmacol.* 54:391–398. PMID: 19998523.

Goraca A, Huk-Kolega H, Piechota A, et al. Lipoic acid—biological activity and therapeutic potential. *Pharmacol Rep.* 2011;63:849–858. PMID: 22001972.

Han D, Tritschler H, Packer L. Alpha-lipoic acid increases intracellular glutathione in a human T-lymphocyte Jurkat cell line. *Biochem Biophys Res Commun.* 1995;207:258–264. PMID: 7857274.

Harding S, Rideout T, Jones P. Evidence for using alpha-lipoic acid in reducing lipoprotein and inflammatory related atherosclerotic risk. *J Diet Suppl.* 2012;9:116–127. PMID: 22607646.

Harrison E, McCormick D. The metabolism of dl-(1,6-14C)lipoic acid in the rat. *Arch Biochem Biophys.* 1974;160:514–522. PMID: 4598618.

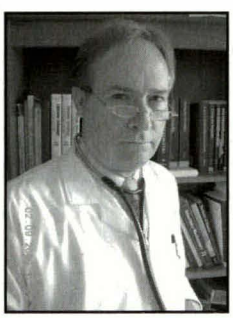
Hussein A, Ahmed A, Shouman S, Sharawy S. Ameliorating effect of DL-α-lipoic acid against cisplatin-induced nephrotoxicity and cardiotoxicity in experimental animals. *Drug Discov Ther.* 2012;6:147–156. PMID: 22890205.

Ji D, Majid A, Yin Z 2013; α-Lipoic acid attenuates light insults to neurones. *Biol Pharm Bull.* 36:1060–1067. PMID: 23811555.

Jiang T, Yin F, Yao J, et al. Lipoic acid restores age-associated impairment of brain energy metabolism through the modulation of Akt/JNK signaling and PBC1α transcriptional pathway. *Aging Cell.* Epub July 1, 2013. PMID: 23815272.

Jung T, Kim S, Shin H, et al. α-Lipoic acid prevents non-alcoholic fatty liver disease in OLETF rats. *Liver Int.* 2012;32:1565–1573. PMID: 22863080.

Kaplan K, Odabasoglu F, Halici Z, et al. Alpha-lipoic acid protects against indomethacin-induced gastric oxidative toxicity by modulating antioxidant system. *J Food Sci.* 2012;77:H224–H230. PMID: 23057764.



Thomas E. Levy, MD, JD, is a board-certified cardiologist and a bar-certified attorney. He has written three books on the wide-ranging properties of vitamin C. Additional books have addressed optimal nutrition, the specifics of dental toxicity, especially root canals, and the importance of glutathione as an antioxidant. Dr. Levy continues to research the impact of the orthomolecular application of vitamin C and antioxidants in general on chronic degenerative diseases. His ongoing research involves documenting that all diseases are different forms of focal scurvy, arising from increased oxidative stress, and that they all benefit from protocols that optimize the antioxidant levels in the body. His present focus centers on validating the ability of a protocol of toxin removal and antioxidant restoration to angiographically normalize most moderate and even many advanced cases of atherosclerotic coronary artery disease. His next book will be titled *Death By Calcium*, in which he will demonstrate that supplemental calcium is nearly always highly toxic.

Kapoor S. The anti-neoplastic effects of alpha-lipoic acid: clinical benefits in system tumors besides lung carcinomas. *Korean J Thorac Cardiovasc Surg.* 2013;46:162–163. PMID: 23614108.
Kaya-Dagistanli F, Tanriverdi G, Altinok A, et al. The effects of alpha lipoic acid on liver cell damage and apoptosis induced by polyunsaturated fatty acids. *Food Chem Toxicol.* 2013;53:84–93. PMID: 23200892.
Kim H, Shin H, Lim H, et al. α-Lipoic acid attenuates coxsackievirus B3-induced ectopic calcification in heart, pancreas, and lung. *Biochem Biophys Res Commun.* 2013;432:378–383. PMID: 23357417.
Kleinkauf-Rocha J, Bobermin L, Machado M, et al. Lipoic acid increases glutamate uptake, glutamine synthetase activity and glutathione content in C6 astrocyte cell line. *Int J Dev Neurosci.* 2013;31:165–170. PMID: 23286972.
Kumar S, Nigam A, Priya S, et al. Lipoic acid prevents Cr(6+) induced cell transformation and the associated genomic dysregulation. *Environ Toxicol Pharmacol.* 2013;36:182–193. PMID: 23608068.
Kwiecien B, Dudek M, Bilska-Wilkosz A, et al. *In vivo* anti-inflammatory activity of lipoic acid derivatives in mice. *Postepy Hig Med Dosw.* 2013;67:331–338. PMID: 23619233.
Ledesma J, Aragon C. Acquisition and reconditioning of ethanol-induced conditioned place preference in mice is blocked by H_2O_2 scavenger alpha lipoic acid. *Psychopharmacology.* 2013;226:673–685. PMID: 22885873.
Lee J, Yi C, Jeon B, et al. α-Lipoic acid attenuates cardiac fibrosis in Otsuka Long-Evans Tokushima fatty rats. *Cardiovasc Diabetol.* 2012;11:111. PMID: 22992429.
Li R, Ji W, Pang J, et al. Alpha-lipoic acid ameliorates oxidative stress by increasing aldehyde dehydrogenase-2 activity in patients with acute coronary syndrome. *Tohoku J Exper Med.* 2013;229:45–51. PMID: 23238616.
Li Y, Liu Y, Shi J, Jia S. Alpha lipoic acid protects lens from H(2)O(2)-induced cataract by inhibiting apoptosis of lens epithelial cells and inducing activation of anti-oxidative enzymes. *Asian Pac J Trop Med.* 2013;6:548–551. PMID: 23768827.
Mainini G, Rotondi M, Di Nola K, et al. Oral supplementation with antioxidant agents containing alpha lipoic acid: effects on postmenopausal bone mass. *Clin Exper Obstetr Gynecol.* 2012;39:489–493. PMID: 23444750.
McCarty M, Barroso-Aranda J, Contreras F. The "rejuvenatory" impact of lipoic acid on mitochondrial function in aging rats may reflect induction and activation of PPAR-gamma coactivator-1alpha. *Med Hypotheses.* 2009;72:29–33. PMID: 18789599.
Michikoshi H, Nakamura T, Sakai K, et al. α-Lipoic acid-induced inhibition of proliferation and met phosphorylation in human non-small cell lung cancer cells. *Cancer Lett.* 2013;335:472–478. PMID: 23507559.
Mijnhout G, Alkhalaf A, Kleefstra N, Bilo H. Alpha lipoic acid: a new treatment for neuropathic pain in patients with diabetes? *Neth J Med.* 2010;68:158–162. PMID: 20421656.
Mitkov M, Aleksandrova I, Orbetzova M. Effect of transdermal testosterone or alpha-lipoic acid on erectile dysfunction and quality of life in patients with type 2 diabetes mellitus. *Folia Med.* 2013;55:55–63. PMID: 23905488.
Nebbioso M, Pranno F, Pescosolido N. Lipoic acid in animal models and clinical use in diabetic retinopathy. *Expert Opin Pharmacother.* 2013;14:1829–1838. PMID: 23790257.
Ohkura Y, Akanuma S, Tachikawa M, Hosoya K. Blood-to-retina transport of biotin via Na+-dependent multivitamin transporter (SMVT; at the inner blood-retinal barrier. *Exper Eye Res.* 2010;91:387–392. PMID: 20599968.
Ou P, Nourooz-Zadeh J, Tritschler H, Wolff S. Activation of aldose reductase in rat lens and metal-ion chelation by aldose reductase inhibitors and lipoic acid. *Free Radic Res.* 1996;25:337–346. PMID: 8889497.
Ozdogan S, Kaman D, Simsek B. Effects of coenzyme Q10 and α-lipoic acid supplementation in fructose fed rats. *J Clin Biochem Nutr.* 2012;50:145–151. PMID: 22448096.
Ozturk G, Ginis Z, Kurt S, et al. Effect of alpha lipoic acid on ifosfamide-induced central neurotoxicity in rats. *Int J Neurosci.* Epub Aug. 12, 2013. PMID: 23855439.
Packer L, Witt E, Tritschler H. Alpha-lipoic acid as a biological antioxidant. *Free Radic Biol Med.* 1995;19:227–250. PMID: 7649494.
Packer L, Tritschler H, Wessel K. Neuroprotection by the metabolic antioxidant alpha-lipoic acid. *Free Radic Biol Med.* 1997;22:359–378. PMID: 8958163.
Packer L. Alpha-lipoic acid: a metabolic antioxidant which regulates NF-kappa B signal transduction and protects against oxidative injury. *Drug Metab Rev.* 1998;30:245–275. PMID: 9606603.
Packer L, Kraemer K, Rimbach G. Molecular aspects of lipoic acid in the prevention of diabetes complications. *Nutrition.* 2001;17:888–895. PMID: 11684397.
Patrick L. Nutrients and HIV: part three – N-acetylcysteine, alpha-lipoic acid, L-glutamine, and L-carnitine. *Altern Med Rev.* 2000;5:290–305. PMID: 19056377.
Patrick L. Mercury toxicity and antioxidants: part I: role of glutathione and alpha-lipoic acid in the treatment of mercury toxicity. *Altern Med Rev.* 2002;7:456–471. PMID: 12495372.
Peana A, Muggironi G, Fois G, Diana M. Alpha-lipoic acid reduces ethanol self-administration in rats. *Alcohol Clin Exp Res.* Epub June 26, 2013. PMID: 23802909.
Polat B, Halici Z, Cadirci E, et al. The effect of alpha-lipoic acid in ovariectomy and inflammation-mediated osteoporosis on the skeletal status of rat bone. *Eur J Pharmacol.* Epub Jul 30 2013. PMID: 23911880.
Prieto-Hontoria P, Perez-Matute P, Fernandez-Galilea, et al. Lipoic acid prevents body weight gain induced by a high fat diet in rats: effects on intestinal sugar transport. *J Physiol Biochem.* 2009;65:43–50. PMID: 19588730.
Ramachandran L, Krishnan C, Nair C. Radioprotection by alpha-lipoic acid palladium complex formulation (POLY-MVA) in mice. *Cancer Biother Radiopharm.* 2010;25:395–399. PMID: 20701542.
Rochette L, Ghibu S, Richard C, et al. Direct and indirect antioxidant properties of α-lipoic acid and therapeutic potential. *Mol Nutr Food Res.* 2013;57:114–125.
Saad E, El-Gowilly S, Sherhaa M, Bistawroos A. Role of oxidative stress and nitric oxide in the protective effects of alpha-lipoic acid and aminoguanidine against isoniazid-rifampicin-induced hepatotoxicity in rats. *Food Chem Toxicol.* 2010;48:1869–1875. PMID: 20417245.
Sayin M, Temiz P, Var A, Temiz C. The dose-dependent neuroprotective effect of alpha-lipoic acid in experimental spinal cord injury. *Neurol Neurochir Pol.* 2013;47:345–351. PMID: 23986424.
Scholich H, Murphy M, Sies H. Antioxidant activity of dihydrolipoate against microsomal lipid peroxidation and its dependence on alpha-tocopherol. *Biochim Biophys Acta.* 1989;1001:256–261. PMID: 2492825.
Seo E, Ha A, Kim W. α-Lipoic acid reduced weight gain and improved the lipid profile in rats fed with high fat diet. *Nutr Res Pract.* 2012;6:195–200. PMID: 22808342.
Shay K, Moreau R, Smith E, et al. Alpha-lipoic acid as a dietary supplement: molecular mechanisms and therapeutic potential. *Biochim Biophys Acta* 2009;1790:1149–1160. PMID: 19664690.

Alpha-Lipoic Acid

Silva M, de Sousa C, Sampaio L, et al. Augmentation therapy with alpha-lipoic acid and desvenlafaxine; a future target for treatment of depression? *Naunyn Schmiedebergs Arch Pharmacol.* 2013;386:685–695. PMID: 23584634.
Singh U, Jialal I. Alpha-lipoic acid supplementation and diabetes. *Nutr Rev.* 2008;66:646–657. PMID: 19019027.
Sokolowska M, Lorenc-Koci E, Bilska A, Iciek M. The effect of lipoic acid on cyanate toxicity in different structures of the rat brain. *Neurotox Res.* 2013;24:345–357. PMID: 23625581.
Stoll S, Hartmann H, Cohen S, Muller W. The potent free radical scavenger alpha-lipoic acid improves memory in aged mice: putative relationship to NMDA receptor deficits. *Pharmacol Biochem Behav.* 1993;46:799–805. PMID: 8309958.
Tabassum H, Parvez S, Pasha S, et al. Protective effect of lipoic acid against methotrexate-induced oxidative stress in liver mitochondria. *Food Chem Toxicol.* 2010;48:1973–1979. PMID: 20451574.
Takaishi N, Yoshida K, Satsu H, Shimizu M. Transepithelial transport of alpha-lipoic acid across human intestinal Caco-2 cell monolayers. *J Agric Food Chem.* 2007;55:5253–5259. PMID: 17536819.
Teichert J, Kern J, Tritschler H, et al. Investigations on the pharmacokinetics of alpha-lipoic acid in health volunteers. *Int J Clin Pharmacol Ther.* 1998;36:625–628. PMID: 9876998.
Trivedi P, Jena G. Role of α-lipoic acid in dextran sulfate sodium-induced ulcerative colitis in mice: studies on inflammation, oxidative stress, DNA damage and fibrosis. *Food Chem Toxicol.* 2013;59:339–355. PMID: 23793040.
Unal F, Taner G, Yuzbasioglu D, Yilmaz S. Antigenotoxic effect of lipoic acid against mitomycin-C in human lymphocyte cultures. *Cytotechnology.* 2013;65:553–565. PMID: 23132681.
Vasdev S, Stuckless J, Richardson V. Role of the immune system in hypertension: modulation by dietary antioxidants. *Int J Angiol.* 2011;20:189–212. PMID: 23204821.

◆

Letters to the Editor

Potassium to Cure Rheumatoid Arthritis

It is my contention that rheumatoid arthritis is either caused by a potassium deficiency or is greatly enabled by one.[1-3] Dr. Reza Rastmanesh has performed a clinical trial that establishes this.[4]

Potassium should be automatically prescribed for rheumatoid arthritis, because getting potassium up to normal from the low values in all RA patients is slow, even with a high unprocessed vegetable diet.[5,6] There are tasty foods that are especially rich in potassium.[7]

However, it is important that thiamine (vitamin B-1) be adequate when supplementing with potassium, because heart disease cannot materialize when both are deficient, but will show up if only one of those is deficient.[8] This is probably the primary reason why heart disease is a main cause of death in rheumatoid arthritis patients.

In view of the fact that this is not considered by current rheumatologists, it would be very valuable for you to bring it into your future research. It is not only that potassium is not considered by physicians in regard to RA; most of them do not even believe that a potassium deficiency is likely. This even though many of them prescribe what are actually supplements, but prescribed under euphemistic terms such as salt substitutes, sodium-free baking powder, ORT salts (oral rehydration therapy for diarrhea), polarizing solutions, GIK (glucose, insulin, potassium) salts, vegetables, or glucosamine. A deficiency is further defined out of existence by defining the blood serum content normal as 4.2 when the actual figure is 4.8.

Charles Weber

Notes

1. Potassium in the etiology of rheumatoid arthritis and heart infarction. *J Appl Nutr*. 1974;26:40.
2. Weber C. Potassium deficiency as a cause of rheumatoid arthritis. *Townsend Lett*. 2000;208:74–76.
3. Weber C. Rheumatoid arthritis treatment by potassium. Chapter 1 (online document). http://charles_w.tripod.com/arthritis.html.
4. Rastmanesh R. A pilot study of potassium supplementation in treatment of hypokalemic patients with rheumatoid arthritis: A randomized, double-blinded placebo controlled trial. *J Pain*. 2008;9(8):722–731.
5. LaCelle PL et al. An investigation of total body potassium in patients with rheumatoid arthritis. *Arthritis Rheum*. 1964;7:321.
6. Sambrook PN, Ansell BM, Foster S, et al. Bone turnover in early rheumatoid arthritis. 1. Biochemical and kinetic indexes. *Ann Rheum Dis*. 1985 Sep;44(9):575–579.
7. Paddison C. Rheumatoid arthritis and potassium power (blog post). Paddison Program for Rheumatoid Arthritis. http://www.rheumatoidarthritisprogram.com/potassium-and-ra.
8. Weber C. Potassium and thiamin (vitamin B-1) in heart disease (online article). http://charles_w.tripod.com/kandthiamin.html.

◆

An Asset for Anyone Facing the Challenges of Hormone Deficiencies

review by Carol Petersen, RPh, CNP

Moods, Emotions, and Aging: Hormones and the Mind-Body Connection, by Phyllis Bronson, PhD
Rowman & Littlefield Publishers
© 2013; hardcover; $32; 156 pp.

Dr. Phyllis Bronson's book could not have been published at a better time. Brisdelle, a version of Paxil, or paroxetine, has just been approved by the FDA as a treatment for hot flashes, despite an advisory committee vote of 10 to 4 against it. Hot flashes, a symptom of menopause believed to be an effect of hormone deficiencies, may now be treated with a potent and highly addictive SSRI (selective serotonin reuptake inhibitor) that has extremely dangerous side effects, including suicidal thoughts.

It is time for the "silver tsunami" that is the powerful baby boomer demographic to wake up to the fact that we don't have to drug ourselves into oblivion to address the consequences of age-related hormonal changes. Hot flashes are *not* the result of an SSRI deficiency! There are better answers and we have the power to demand them.

Bronson's book will equip anyone facing the challenges of hormone deficiencies. Because she works with and writes about real people with serious mood and hormone imbalances, her readers may see themselves in the patient stories that she tells and be inspired to take action to resolve their own health issues.

Phyllis Bronson is a rare individual who brings science to practice in her role as a clinical biochemist. Too often, the science and studies are readily available but clinicians don't or won't seek them out. Or, if they do, they are ostracized by their peers for stepping out of the box that their medical education has defined for them.

Bronson asks the hard questions of our organized medical providers:

- Why is it that, since the WHI studies (which are discussed at length in the book) revealed significant problems with the use of Premarin and Prempro, patients are still being prescribed these products, albeit "lower" doses are now promoted?
- Why, when she has seen women with low estradiol levels resolve their complaint about brain fog within an hour after supplementing with estradiol, are women being offered antidepressant drugs instead of estrogen hormones?
- Why, when the bioidentical hormone progesterone has been shown to be protective of nerve tissue and potentially protect against cancer, are women systematically being denied the use of progesterone when their ovaries are removed?

In addition to the hormones made from cholesterol in our bodies (e.g., the sex and adrenal hormones), there are also hormones derived from amino acids. Amino acids are the building blocks of the proteins that we eat, and they become available to the body when protein is digested.

Bronson found that it is easy to supplement amino acids to help balance hormones such as dopamine and serotonin. Here's a radical thought: Instead of blocking the metabolism and reuptake of serotonin in the nerve synapse, which is what SSRIs do to raise serotonin levels, what if we supplement the body with the amino acids needed to make more serotonin? This is the path that Bronson prefers, and she describes in her book how this has worked successfully for her clients.

In the book *Honest Medicine*, Dr. Burt Berkson describes how medical students are not encouraged to question or think.[1] Their education is now just "training" consisting of whatever the current consensus determines to be the current standard of care. Unfortunately, standards of care can be influenced by people with motives that are not necessarily in line with what might be best for individual patient care.

Is your practitioner willing to go beyond the "training" received in medical school? Is she or he ready to partner with you to achieve optimal individualized care? Then Bronson's book will be an asset to both of you as you jointly evaluate your biochemical individuality and consider treatment accordingly.

Another valuable facet of Bronson's book is discussion of how emotional issues can both provoke and result from hormone disarray. With the myriad of tools provided in this book, people who may have "lost" themselves emotionally may be able to find a pathway back.

Notes

1. Schopick J. *Honest Medicine: Effective, Time-Tested, Inexpensive Treatments for Life-Threatening Diseases*. Oak Park, IL: Innovative Publishing; 2011.

◆

The Anti-Aging Desk Reference for Integrative Physicians

review by Jonathan Collin, MD

Encyclopedia of Clinical Anti-Aging Medicine & Regenerative Biomedical Technologies
edited by Ronald Klatz, MD; Robert Goldman, MD; and Catherine Cebula
American Academy of Anti-Aging Medicine; www.worldhealth.net/red-psa
© 2012; 822 pages; $395

The *Encyclopedia of Clinical Anti-Aging Medicine & Regenerative Biomedical Technologies* is a textbook on anti-aging medicine with contributions by 29 MDs and health scientists. Anti-aging medicine is not just about physical appearance, muscular strength, and sexual vitality, although those are rightful goals for those engaging in it. Anti-aging medicine is preventing the development of diseases of aging – neurodegenerative disease, dementia, cardiovascular disease, cancer, and arthritis. Conventional medicine limits prevention to following a prudent diet, exercise, smoking cessation, sleep hygiene, learning relaxation, moderation of alcohol consumption, application of sunscreen, daily aspirin, and frequent medical screening. As necessary as these interventions are, they fall short of preventing the development of degenerative disease, much less slowing the aging process. The American Academy of Anti-Aging Medicine (A4M), founded in 1992, was established to study and educate on anti-aging medicine and regenerative technologies shown to intervene in the degenerative process and restore youthful vigor. Despite the recent movement by sports authorities to curtail athletes from engaging in "doping" activities to enhance athletic performance, anti-aging medicine holds a legitimate place in medicine. The A4M *Encyclopedia* reviews the evidence-based medicine supporting medical and regenerative technologies that prevent degenerative disease and restore vitality. The A4M *Encyclopedia* also provides the *A4M Anti-Aging Desk Reference* as well as access to 5000 pages of peer-reviewed articles in the A4M Digital Archival Library.

Terry Grossman, MD, borrows from David Letterman and writes about "The Top Ten Life Extension Nutrients and Drugs." What is his number one drug agent for anti-aging? "Metformin." Metformin is considered the first line of medication for diabetes; it is also considered an important agent for metabolic syndrome. Beyond its role in glucose control, metformin plays an important role in lowering cardiovascular risk, preventing cancer, and opposing the aging process. Mark Houston, MD, examines the role of nutraceuticals in the treatment and prevention of hypertension and hypercholesterolemia. How often do we consider advising eating more celery as a diuretic, garlic as a vasodilator, and fish oil as a "calcium channel blocker?" We know about the prudent heart diet for dyslipidemia – Houston would recommend the Mediterranean diet – but how about supplementation with gamma-/delta-tocotrienols, pantethine, probiotics, curcumin, and plant sterols in addition to niacin and red rice yeast?

David Perlmutter, MD, reminds us that inflammation and insulin resistance play a key role in development of neurodegenerative disease. He notes the importance of measuring homocysteine and supplementation of coenzyme Q10 and glutathione. Tim Watt, MD, writes that Lyme disease may be underlying neurologic disorders and must be considered in the diagnostic workup. Watt discusses nonpharmacologic approaches to migraine that must be considered as part of a prevention strategy. He considers the nondrug interventions needed to improve cognitive and neurodegenerative disease. Watt emphasizes that detoxification and reduced exposure to heavy metals and chemicals are critical to preventing brain disease. He also explains that addressing metabolic dysfunction and achieving hormone balance are required to slow down degenerative changes to the brain.

Ron Rothenberg, MD, examines hormone optimization in the aging process. Rothenberg argues that hormone deficiency plays a critical role in aging and that individuals with low normal levels of hormones require treatment. Despite the fact that the medical community worries about hormone therapy's increasing the risk for cancer, Rothenberg would argue that untreated suboptimal hormone levels would increase cancer risk as well. Rothenberg believes that a woman having low levels of estrogen, progesterone, and testosterone definitely requires treatment, as should a man having a low level of testosterone. Further, Rothenberg thinks that all hormones deserve consideration in managing the aging process, including thyroid, cortisol, DHEA, melatonin, and human growth hormone (HGH). Despite most medical boards' naysaying adult treatment with HGH, Rothenberg outlines

the evidence for adult growth hormone deficiency and treats patients with it. The A4M *Encyclopedia* is worth the price just to read Rothenberg's chapter!

Mark Rosenberg, MD, is the director of A4M's Fellowship in Integrative Cancer Therapy; A4M conducts several fellowships in anti-aging medicine credentialed by University of Southern Florida. Rosenberg notes the growing evidence that a ketogenic diet and restriction of calories play an important role in control of cancer. His discussion of cancer pH manipulation therapy presents an important metabolic approach to cancer management. Rosenberg also writes about low-dose metronomic chemotherapy wherein repetitive low doses of chemotherapy are administered – such an approach may be more effective than traditional chemotherapy schedules. Rosenberg's most intriguing discussion is on the role of telomeres in cancer. Telomerase is detected in 90% of all malignancies, making it an important biomarker to predict better or worse outcomes. Strategies that are capable of shutting down tumor cell telomerase activity may be pivotal in arresting cancer.

Nicholas Gonzalez, MD, has been an important physician in the alternative medical community for many years and is a familiar writer for readers of the *Townsend Letter*. Gonzalez is one of the physicians whose work was examined by the US Congressional Office of Technology Assessment in the 1980s; the OTA report led to the founding of the Office of Complementary and Alternative Medicine at the NIH (now NCCAM). Gonzalez's approach to cancer is based on an individualized dietary program, high-dose pancreatic enzymes, high-dose nutraceutical supplementation, and coffee enemas. Gonzalez's discussion of his treatment approach is a compelling mix of medical theory and history.

Please be prepared to receive a "telephone-directory"-sized reference book that is heavy. The writing is well referenced but, regrettably, is not indexed. For those who are new to anti-aging medicine as well as those whose practice focuses on it, the A4M *Encyclopedia* is a great reference.

◆

A Must-Read on This Important Mineral

review by Richard W. Walker Jr., MD

Magnificent Magnesium, by Dennis Goodman, MD
Square One Publishers; 115 Herricks Rd., Garden City Park, New York 11040
© 2013; quality paperback; $14.95; 184 pp.

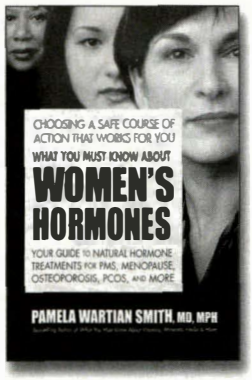
Magnificent Magnesium, by Dennis Goodman, MD, should be read by everyone concerned about the issues of health, including both lay public and health-care professionals. I use several ways to determine if a writer of health-care information has done a good job with the material being presented: First, has the writer been able to translate difficult medical and scientific constructs so that they are digestible – can one understand, on a basic level, what's being said; can a reader who may not have an advanced education learn from what is written? Second, is the material scientifically sound and presenting up-to-date knowledge that is confirmed in the literature? Third, and probably most important, can readers use the information to improve the quality of their lives and, hopefully, at cost and permanently? Fourth, is there something that I as a physician can extract as new and usable information? After reading Dr. Goodman's book, my answer to all the above questions is a resounding yes!

The book is easy reading and will educate you as you go through it. It addresses many issues that health-care providers who practice the new medicine called functional medicine believe and do. Functional medicine looks for the root cause of illness and does not just treat the manifestations of a disease but addresses why the disease/condition is there in the first place. It also attempts to reduce the use of pharmaceuticals/medications as much as possible, exchanging medications for what the body is natural lacking or requiring that allows it to function better physiologically.

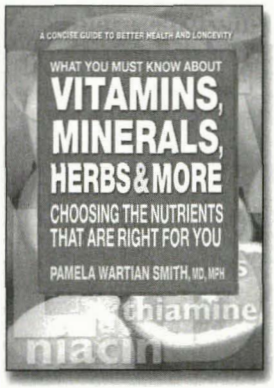
After I read the book, my wife started reading it. She asked me, are we taking magnesium? I said no. We both looked at each other and said, we'll start today. Good work, Dr. Goodman, and thanks.

◆

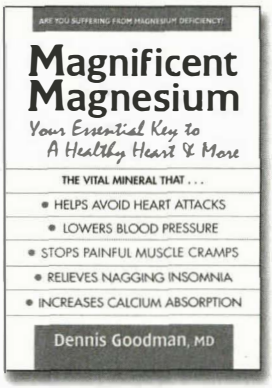
GOOD HEALTH BEGINS WITH THE RIGHT BOOKS.



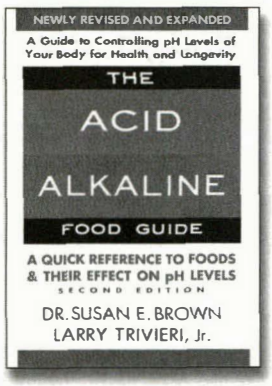
978-0-7570-0307-3 • $17.95



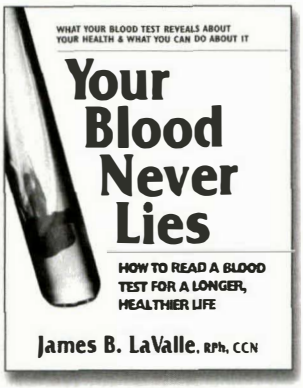
978-0-7570-0233-5 • $15.95



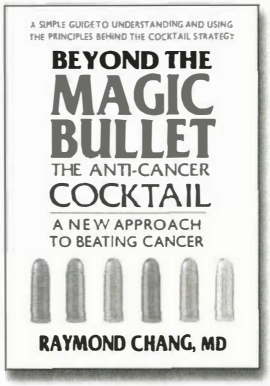
978-0-7570-0391-2 • $14.95



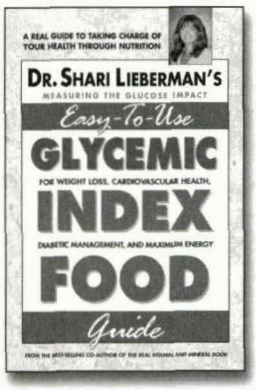
978-0-7570-0393-6 • $8.95



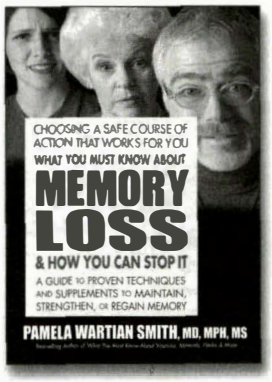
978-0-7570-0350-9 • $16.95



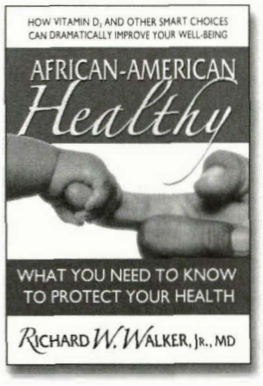
978-0-7570-0232-8 • $16.95



978-0-7570-0245-8 • $7.95



978-0-7570-0386-8 • $14.95



978-0-7570-0361-5 • $15.95

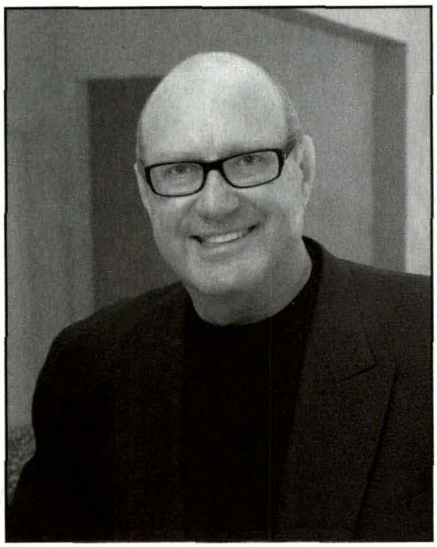
THE BEST PLACE TO START.

SQUAREONEPUBLISHERS

For a copy of our catalog, call us at **516.535.2010**, or visit: www.squareonepublishers.com

During February & March, call and order any books from Square One and get a 20% discount plus free shipping only for Townsend Letter readers. Toll-free 877-900-2665 x 103

Professional bulk order discounts available.



Monthly Miracles

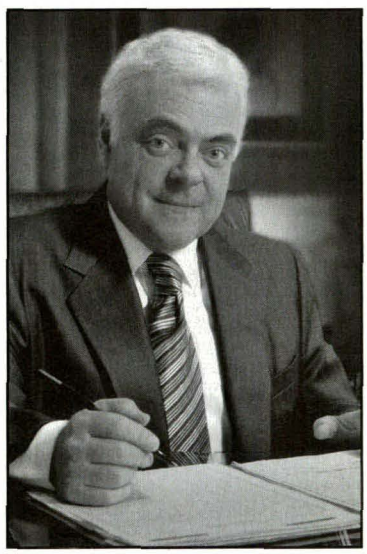
by Michael Gerber, MD, HMD
contact@gerbermedical.com

Nevada Homeopathic and Integrative Medical Association 2013 Annual Fall Seminar: Part 1

Michael Platt, MD: Adrenaline Dominance

Dr. Platt, an internist trained in at the New York Medical College who lives in Rancho Mirage, California, gives a new platform for bioidentical hormone treatment. In his book *The Miracle of Bio-Identical Hormones,* he uses large doses of topical progesterone, 100 mg 4 × per day, 1 to 3 minutes before meals and a low-glycemic snack before bed, applied to the forearms.[1] In this lecture, he suggests that progesterone, an adrenal hormone precursor, is antiadrenalin and should be used for fibromyalgia, ADHD, depression, insomnia, anger, RLS, chronic interstitial cystitis, IBS, hyperemesis gravidarum, PMDD, bed-wetting in children, PTSD, alcoholism, and drug addiction. Additionally, adrenaline can exacerbate conditions such as hypertension, diabetes and weight gain. He writes that progesterone is not feminizing and is good for men and children for anxiety, ADHD, and insomnia. In our experience, it is working well.

Platt apparently had several famous debates with the departed John Lee, MD, who recommended only 20 mg of progesterone per day. He also gives the progesterone throughout the menstrual cycle in women unless they are trying to conceive, in which case he suggests applying it day 12 through 28 so as not to suppress ovulation. He is careful to not depend completely on progesterone for birth control and regards it as a uterine tonic. In our experience, it is good to use throughout pregnancy and inhibits miscarriage, especially at the 12- to 14-week time period. Klinghardt also recommends it throughout the pregnancy to promote healthy, smart, and attractive babies. It is always important to recommend for women who have had miscarriages along with thyroid support.



Michael Platt, MD

Although not offering a mechanism for adrenaline suppression, several existing pathways seem to be supportive. DARPP-32 (dopamine and cAMP related phosphoprotein M_r 32,000) may be critical for this action. Due to cost considerations, our clinic is recommending 60 mg per dose progesterone; and it seems to be helpful at this level. Anxiety reduction is the first sign of effectiveness. Overdose may cause fatigue. Some women do not tolerate progesterone well, and I think some kind of energetic testing is always a good idea.

Progesterone can be used for a myriad of conditions, especially for women. Platt recommends it for fatigue, hot flashes, fibromyalgia, PMS, osteoporosis, weight loss, sexual dysfunction, anger, and migraine headaches. Usually, he believes, women who have some fat on them do not need estradiol during and after menopause unless they are extremely thin. Estriol is recommended for vaginal dryness in menopause, 2 mg/g, 7 to 10 days in a row and then every 3 to 4 weeks. We have found that some women need a little estradiol, such as Biest. 80/20 E3/E2 ratio around 2 mg/g total is a good starting point. He also likes 2 mg/g testosterone for low libido in women. We also find

that testosterone is great for stress incontinence and bladder or uterine prolapse when applied to the perineum several times per week. Overdose in women on testosterone causes first the appearance of jaw line acne, then facial or breast hair and hoarseness tertiarily. Sudden withdrawal from estradiol patches and creams can precipitate terrific hot flashes. Go slowly and cut down the estradiol gradually. Women using the estriol cream vaginally report improved ease and intensity of orgasms.

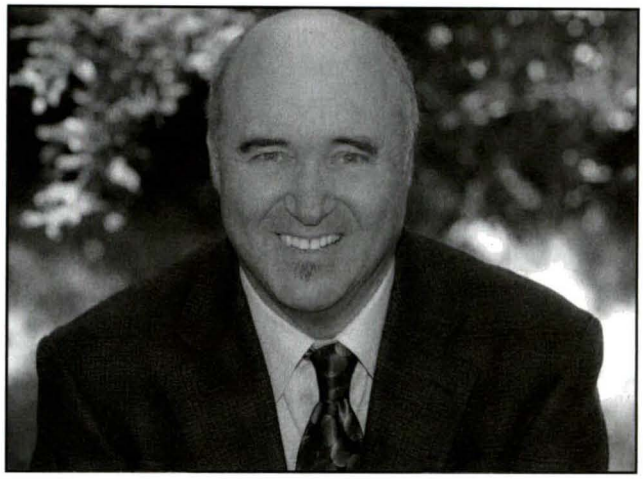
Dana Ullman, MPH: How and Why Homeopathic Medicines Work: New Evidence, New and Provocative Results

Dana Ullman is a national and international spokesman for homeopathy. Currently residing in Berkeley, California, he is the founder and owner of Homeopathic Educational Services and has written 11 books on homeopathy and copublished 35 books. He is currently a columnist for the Huffington Post and has contributed chapters in medical textbooks and many articles in the mainstream and peer-reviewed press. His book *The Homeopathic Revolution: Why Famous People and Cultural Heroes Choose Homeopathy First* is a fascinating review of the history of homeopathy and the hundreds of famous people who used and currently use and support it.[2]

His book and lecture focus on many supportive references for homeopathy. Nanopharmacology is explained and supported as a rational mechanism for homeopathy. "Certain species of moths can smell pheromones two miles away but only of their own species, an example of resonance which is a key to homeopathic prescribing. Beta endorphins are known to modulate natural killer cell activity in dilutions of 10^{-18}. Interlukin1 has been found to exhibit increased T-cell clone proliferation at 10^{-19} concentration. Pheromones will result in hyper-sensitive reaction when as little as a single molecule is received."

Ullman visits the biphasic reaction in the body. The fact that drugs can have two phases of action, depending upon their concentration, is also called the Arndt-Schulz law, which states that weak concentrations of biological agents stimulate physiological activity, medium concentrations of agents depress physiological activity, and large concentrations halt physiological activity.

New research suggests that when a homeopathic remedy is succussed (shaken in water), which is acknowledged to increase their potency, this action also creates microbubbles in the water, which changes its structure to capture the energy message of the remedy. Also, because the remedy is succussed in water in a glass vial, researchers have found extremely small amounts of silica fragments or chips to fall into the water, creating their own pharmacological effect.



Dana Ullman, MPH

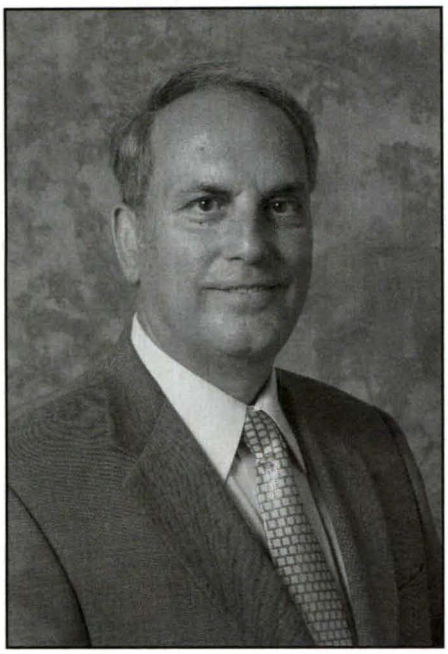
If you like homeopathic medicine, you are in good company. Ullman extensively documents homeopathic patients and supporters. Hahnemann first introduced the concept in the early 1800 after he experimented on himself with quinine in large doses and found that it mimicked the symptoms of malaria and that a very small dose of quinine could cure it. (Hahnemann is the only physician to have a statue in Washington, D.C.)

Read Ullman's book to get the full account of the following supporters of homeopathy: Charles Darwin; Charles Menninger, MD; C. Everett Koop, MD; Sarah Bernhardt; Douglas Fairbanks Jr.; Marlene Dietrich; John Wayne; Priscilla Presley; Ludwig van Beethoven; Fredric Chopin; Nicolo Paganini; Robert Schumann; Richard Wagner; Yehudi Menuhin; Dizzy Gillespie; Ravi Shankar; Tina Turner; Paul McCartney; George Harrison; Vincent van Gogh; Henri Paul Gauguin; Antoni Gaudí; Presidents John Tyler, James Garfield, Benjamin Harrison, William McKinley, Calvin Coolidge, Herbert Hoover, and William Jefferson Clinton; Tony Blair; M. K. Gandhi; John D. Rockefeller Sr.; George Westinghouse; H. J. Heinz; William Wrigley; Queen Elizabeth II; Prince Charles; Napoleon Bonaparte; and hundreds more. Even more importantly, Ullman credits the homeopathic physicians who treated these luminaries, often at great peril to themselves from allopathic physicians and licensing boards.

Notes

1. Platt M. *The Miracle of Bio-Identical Hormones*. 2nd ed. Clancy Lane Publishing; 2007.
2. Ullman D. *The Homeopathic Revolution – Why Famous People and Cultural Heroes Choose Homeopathy*. Berkeley, CA: MPH Publisher North Atlantic Books; 2007.

◆



Quantum Medicine Update

by Paul Yanick Jr., PhD
American Academy of Quantum Medicine
www.aaqm.org

Dysbiosis, Hepatobiliary and Barrier Function, and Gut Inflammation

Patient outcome in severe and critical illnesses is strongly related to the strength of the mucosal barriers that contribute greatly to the biodiversity, sustainability, and anti-inflammatory powers of a symbiotic microbiome. Determinants for poor outcome are antibiotic-caused dysbiosis, ionic and toxic water, permeable gut barrier function, and deficiencies of synbiotic proteins that impair hepatobiliary and barrier functions.[1-18] According to Bengmark, "Most patients do not die of their disease but ... by the treatments. Advanced surgical and medical treatments, as well as medical and surgical emergences are, despite some breath-taking advances in medico-pharmaceutical and surgical treatment are still affected by an unacceptably high morbidity and morality rate."[1-4]

Celiac disease or gluten intolerance labels represent only the tip of the iceberg of dysbiosis and impaired hepatobiliary and barrier function. The larger issue relates to barrier malnourishment. It is the intestinal epithelium that mediates and regulates important microbiome networks that digest and ferment food into a goldmine of hundreds of thousands of hard-to-get nutrients and compounds which detoxify the body of pollutants that the human body cannot detoxify.[1-3] The challenge of reduced microbiome biodiversity can finally be met by focusing more attention on nourishing and restoring gut barrier integrity to empower many immunological functions.

My earlier university and hospital-based medical research in the 1970s led me to discover how impaired barrier and hepatobiliary function caused auditory, metabolic, and neurological disorders.[5-10] We demonstrated over 35 years ago that with its surface area the size of a soccer field, a loss of gut barrier integrity causes chronic malnourishment, toxicity, and prolonged inflammation.[5-10] Increasing knowledge, both empirical and experimental, supports the fact that there is a critical need to focus on gut microflora ecology and barrier function, proper hydration, and cell polarity and quorum sensing to maximize colonization and microflora biodiversity.[1-3,11-18]

Recent cutting-edge use of synbiotic protein to the postoperative and clinically ill support my earlier research on how synbiotic protein can improve hepatobiliary and barrier function.[11-13] Our latest research supports the fact that early and aggressive use of quorum-fermented synbiotic protein minimizes gut inflammation via improved hepatobiliary and gut barrier functions. Clearly, synbiotics nourish the microbiome habitat so that it can expand fermentative actions and the microbial strains necessary to optimize inner ecosystem cycles of cleansing and nourishment and absorb and utilize vitamin D and other nutrients.

Hepatobiliary and barrier function are the front line of all immunological defenses and involve the interplay of transmembrane proteins that maintain tight junction formation and function and cell polarity. Synbiotic and quorum-fermented rice protein reconditions gut barrier function; polarizes hepatocytes that calibrate microflora; improves carbohydrate, lipid, and protein metabolism; and upregulates detoxification and the biliary excretion of toxins.[19-25] In turn, robust gut microbiota metabolize bile aids to amplify anti-inflammatory actions and transform the gut lumen into a habitat that favors persistent symbiosis.[26] Unlike pharmaceutical drugs, these novel nourishment tactics are not deleterious to the microbiota and seem to greatly amplify the anti-inflammatory mechanisms of the microbiome.

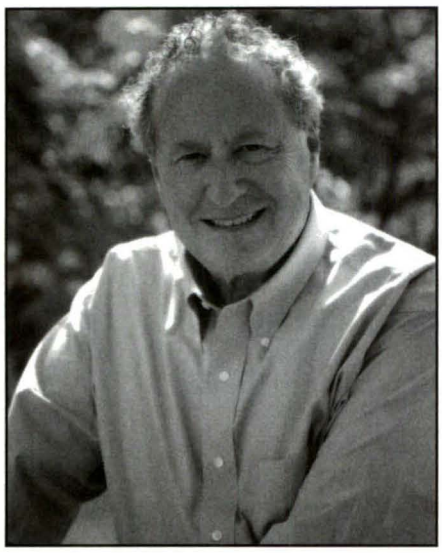
In summary, there is real stability and substance and authority found in nature's timeless wisdom and ecosystem cycles. As with a compass ever pointing to what is so and

giving us direction, do we view nature as the final arbiter or truth when addressing unresolved gut inflammation? The only obstacle to hearing and heeding nature's wisdom comes from the ruthless ambition that drives us away from nature toward the petty, power-wielding, and insidious profit motives of the corporate business world. Finally, instead of elevating our "doctor authority status" over the rich genetic diversity of the microbiome that nourishes and sustains life, may we pay more attention to functional deficits in hepatobiliary and barrier dysfunction that give inflammation more power so that it erodes barrier function or the habitat needed to restore a superorganism potential. When we become the master and subjugate our patient's vastly more intelligent microbial cell communities, we *ignore* the healing power and wisdom in nature. And this is the root of what infects our culture and generates massive amounts of human suffering, inflammation, and death. Waking up to the situation opens a door that invites and beckons passage into the brilliant ecosystem world of nature.

Notes

1. Suziki T. Regulation of intestinal epithelial permeability by tight functions. *Cell Mol Life Sci.* 2013;70:631–659.
2. Ivanov AL. Structure & regulation of intestinal epithelial tight junctions: current concepts & unanswered questions. *Adv Exp Med Biol.* 2012:763;132–148.
3. Bengmark S. Nutrition of the critically ill – emphasis on liver and pancreas. *Hepatobiliary Surg Nutr.* 2012;1(1):25–52.
4. Iapichino G et al. Impact of antibiotics on the gut microbiota of critically ill patients. *J Med Microbiol.* 2008;57:1007–1014.
5. Yanick P. Distortion in the cochlear damaged ear. *J Aud Res.* 1973;13:333–338.
6. Yanick P et al. Audiologic and metabolic findings in 90 patients with fluctuant hearing loss. *J Am Audiol Soc.* 1976:2,15–19.
7. Yanick P. Static impedance and aberrant auditory phenomena. *Audiol Hear Educ.* 1979:11–12.
8. Yanick P. The application of holistic principles in hearing disorders. *Int J Holist Health Med.* 1983:1–3.
9. Yanick P. Dietary and lifestyle influences on cochlear disorders and biochemical status: A 12-month study. *J Appl Nutr.* 1988;40(2):75–84.
10. Yanick P. Holistic applications to ear disorders. *J Int Acad Prev Med.* 1988:8(3):45–48.
11. Bengmark S. Synbiotics in human medicine. In: Versalovic J, Wilson M. *Therapeutic Microbiology: Probiotics & Related Strategies.* Washington D.C.: ASM Press; 2008:307–321.
12. Yanick P. Bimolecular nutrition and the GI system. *Townsend Lett.* December 1993:1248–1253.
13. Yanick P. Gastrointestinal rejuvenation via synbiotic nourishment to upregulate prebiotic butyrate, IGFs and HGH. *Townsend Lett.* June 2006:109–111.
14. Yanick P. The forgotten role of water in achieving a superorganism potential. *Townsend Lett.* July 2013.
15. Yanick P. Detoxification secrets and healing power of water. *Townsend Lett.* November 2005.
16. Yanick P Activating quantum healing with new flexoelectric technologies. *Townsend Lett.* 2003;154–156.
17. Yanick P. Efferent-afferent and microbiota imbalances in MCS and fibromyalgia. *Townsend Lett.* November 2009:99–101.
18. Yanick P. Colonization resistance of barrier microflora in carcinogenesis and allergic patients. *Townsend Lett.* August/Sept 2010:98–100.
19. Wand L et al. The maintenance and generation of membrane polarity in hepatocytes. Hepatology 2004:39:4;892–899.
20. Arias IM et al. Regulation of bile canalicular network formation and maintenance by AMPP-activated protein kinease and LKB1. *J Cell Sci.* 2010;123:3294–302.
21. Arias IM et al. Bile acid stimulates hepatocyte polarization. *Proc Natl Acad Sci USA.* 2011:108;1403–1408.
22. Arias I M et al. The biology of the bile canaliculus. Hepatology. 1993;17:318–329.
23. Bryant DM et al. From cells to organs: building polarized tissue. *Nat Rev Mol Cell Biol.* 2008:9:887–901.
24. Hardie DG. AMP-activated/SNF1 protein kinases: conserved guardians of cellular energy. *Nat Rev Mol Cell Biol.* 2007;8:774–785.
25. Jansen M et al. LKB1 and AMPK family signaling: the intimate link between cell polarity and energy metabolism. *Physiol Rev.* 2009;89:777–798.
26. Duboc H et al. Connecting dysbiosis, bile-acid dysmetabolism and gut inflammation in inflammatory bowel diseases. *Gut.* 2013;4:531–539.

◆



War on Cancer

by Ralph Moss, PhD
www.cancerdecisions.com

Nuts Against Cancer

One of the most intriguing health stories of the year established a link between the consumption of tree or ground nuts and sharply lower rates of mortality from cancer, cardiovascular disease, and other causes of death (Bao 2013).

The bottom line is that daily nut consumption over time brings about a 20% decline in most causes of death. Very few drugs can provide similar health benefits.

Of course, advocates of natural health have long postulated the benefit of nuts. Not for nothing are they called "health nuts"! But in 1992, the Adventist Health Study gave scientific evidence that eating nuts prevented death, specifically from heart disease (Fraser 1992).

This was a controversial finding at the time. Some physicians simply could not believe that a common food could prevent death from serious illness. Writing in *JAMA Internal Medicine*, one author, Gabe Mirken, MD, postulated that the health benefit seen among Seventh-day Adventists came from the absence of whole-milk dairy and eggs, not the presence of nuts. He went so far as to say: "Nuts do not prevent heart attacks."

Two decades later, it turns out that nuts do prevent heart attacks, and also prevent deaths from diabetes, stroke, and several forms of cancer. There was also a 25% reduction in deaths from cardiovascular disease, 29% for heart disease, 24% for respiratory disease, and so on. The exact reason for this benefit remains unclear, but nuts are a good source of unsaturated fatty acids, as well as fiber, phytosterols, and certain antioxidants.

Even the FDA now concedes that 1.5 ounces of nuts per day, taken as part of a low-fat diet, "may reduce the risk of heart disease."

Adventist Study

In 1998, as part of the Adventist study, it was shown that nut consumption reduced the risk of colorectal cancer. However, this news was obscured at the time because the Adventist study focused on the harm of high red meat consumption, low legume intake, and high body mass index. Those three factors led to a "threefold elevation in risk" of colorectal cancer (Singh 1998).

In the latest study, there was an 11% reduction in cancer overall. Admittedly, the present study was funded by the Tree Nut Council, which of course raised some skeptical eyebrows. However, given the high quality of this study, and its breadth (76,000+ participants from the Nurses' Health Study and 42,000+ from the Health Professionals' Follow-up Study), I think we can accept the authors' assertion that the sponsors had nothing to do with the positive outcome of the paper.

Simply put, nuts are good for you. They help prevent some cancers as well as a host of other illnesses. They are also delicious. So, unless you are allergic to them, the only good reason not to eat them is that they are too delicious and may add unwanted pounds. But even that risk is overstated, since they may reduce the number of empty calories that people eat.

My "gut" instinct is that raw nuts may have some health benefits that are missing in roasted nuts, and I personally try to include pecans, walnuts, or other unprocessed nuts in my daily regimen.

How Effective Are Targeted Therapies? The Case of Liver Cancer

"Targeted" therapies are those drugs that attack specific molecules present in or around cancers. These are mostly classified as "kinases." This type of therapy tries to avoid the indiscriminate killing of good as well as bad cells, which is more characteristic of conventional chemotherapy. Such targeted drugs include trastuzumab (Herceptin), Gleevec (imatinib), and Tarceva (erlotinib).

I will focus here on the treatment of hepatocellular carcinoma (HCC), better known as primary liver cancer. It is a disease with an enormous worldwide impact: the fifth

most common malignancy worldwide and the second most common cause of death, especially in Asia.

There are various forms of liver cancer, and various treatments are effective and appropriate for particular stages. But for the present I am not concerned with surgery, transplantation, radioisotopes, or other potential treatments. I am also not speaking right now about complementary and alternative medicine (CAM). I am exclusively concerned here with the use of drugs in treating advanced HCC.

For decades, researchers tried to discover forms of chemotherapy that were effective against HCC, but the results were always unimpressive. Doxorubicin (Adriamycin), when used as a single agent, resulted in a response rate of less than 25%. In addition, in one nonrandomized phase II study, 32 patients given a combination of gemcitabine and oxaliplatin (called GEMOX) had a partial response (PR) rate of 18%, with an overall survival time of 11.5 months (Louafi 2007).

But, as a rule, toxic chemotherapy had "no proven benefits on survival in HCC," to quote from the authoritative DeVita, Hellman, and Rosenberg textbook *Cancer: Principles and Practice of Oncology* (2014 online edition).

SHARP Trial

Then came the SHARP trial, whose results were presented at the 2007 annual meeting of the American Society of Clinical Oncology (Llovet 2008). SHARP stands for "Sorafenib Hepatocellular Carcinoma Assessment Randomized Protocol." This large trial established a new targeted drug sorafenib (Nexavar) as the most effective treatment for metastatic HCC.

The National Comprehensive Cancer Network (NCCN) guidelines states that "for selected patients, a randomized clinical trial has demonstrated survival benefits." The SHARP paper's principle author was Josep Llovet of Barcelona (and Mount Sinai Hospital, New York). It had over 130 coauthors from all over Europe and was published in a major journal.

A total of 602 patients with advanced HCC, who had not received any previous systemic treatment, were randomized to receive either sorafenib at a dose of 400 mg twice daily vs. placebo.

"Primary outcomes were overall survival and the time to symptomatic progression. Secondary outcomes included the time to radiologic progression and safety," Llovet and his colleagues wrote.

After 1 year, 321 deaths had occurred and the trial was stopped. The median overall survival at that point was 10.7 months in the sorafenib group vs. 7.9 months in the placebo group. The survival benefit of sorafenib was thus 2.8 months. This was statistically significant.

Some other figures: the time to progression by X-ray assessment was 5.5 months vs. 2.8 months. There was actually a small decrease in the time to symptomatic progression (4.1 months vs. 4.9 months for placebo), but this was not statistically significant.

Although "responses" (i.e., tumor shrinkages) were not included in the study design, only 7 patients in the sorafenib group (2%) and 2 patients in the placebo group (1%) had a partial response. Not a single patient had a complete response. I think it is a good thing that the authors were not so focused on shrinking tumors but looked instead at the actual effect on survival.

How predictive would the SHARP results be for other, possibly more typical, HCC patients? Perhaps not much, since, like most clinical trials, this one had many exclusion and inclusion criteria. The paper states that 300 patients who were considered for inclusion were then excluded because they did not meet the protocol's criteria, withdrew their consent, had an adverse event, died, or were lost to follow-up. A total of 602 patients then underwent randomization to either treatment or placebo.

In addition, half of the patients had had no previous treatment at all, and none of them had received any form of chemotherapy. They were thus, relatively speaking, "virgin" patients. One cannot expect the results to be the same in patients with more advanced, or heavily pretreated, disease.

Perhaps the biggest departure from the norm was that patients in this trial all had well-preserved liver function (this was called Child-Pugh class A). This is very important, since many HCC patients have concurrent liver diseases such as hepatitis B, hepatitis C, or cirrhosis. This can complicate matters.

As to side effects, the study noted: "Diarrhea, weight loss, hand-foot skin reaction, and hypophosphatemia [a low level of phosphorus in the blood] were more frequent in the sorafenib group."

I shall return to this point in a moment.

Asia-Pacific Trial

The SHARP trial was based in Europe. But in the following year, a similar trial, called Asia-Pacific, was published in *Lancet Oncology* (Cheng 2009).This did not have quite so positive an outcome. In Asia, HCC more typically presents with an underlying hepatitis B infection (not hepatitis C, as is more frequently the case in Europe).

Asia-Pacific enrolled a total of 271 patients, of whom 150 received sorafenib while 76 received placebo. Median overall survival was 6.5 months in the sorafenib group vs. 4.2 months in the placebo group, for a difference of 2.3 months. The median time to progression was 2.8 months in the sorafenib group vs. 1.4 months in the placebo group. The reader will notice that sorafenib-treated patients in Asia had shorter overall survival time than placebo patients in Europe!

The benefit of sorafenib seems very much related to the selection of patients (and their underlying disease state).

The Asia-Pacific authors concluded: "Sorafenib is effective for the treatment of advanced hepatocellular carcinoma in patients from the Asia-Pacific region, and is well tolerated." But "effective" in this case means extending survival by a total of 2.3 months (i.e., from 4.2 months to 6.5 months).

As Manish Shah, MD, pointed out at the DeVita textbook website: "Both the SHARP and Asia-Pacific studies were ➤

limited to patients with unresectable or metastatic HCC who also had preserved liver function. The benefit of sorafenib in patients with [more advanced disease] has not been established" (2014).

Sorafenib is produced by Onyx Pharmaceuticals and Bayer HealthCare Pharmaceuticals. The pharmacy price is $5400 per month, although discounts may be available for poor patients.

Inflated Results?

I cannot help mentioning one factor that may have inflated the results of this as well as other targeted agents. That was the effect of treatment on total intake of calories by those getting the drug as opposed to the placebo. In 2013, calorie restriction (CR) was called "one of the most potent broadly acting dietary interventions for ... inhibiting cancer in experimental models" (Hursting 2013).

The SHARP trial reported that "weight loss" was the second major side effect of sorafenib. How then can we be sure that at least some of the modest life extension seen in this and the Asia-Pacific trial was not due at least in part to the decrease in calories? I agree with the suggestion of Thomas Seyfried, PhD, of Boston College (Massachusetts) that there should be a "third arm" in cancer treatment clinical trials, in which patients do not get the drug in question but simply have their caloric intake adjusted to equal that of the treatment-arm participants. We then could know how much of the resulting effect was due to the drug per se and how much to the overall reduction in food intake.

In any case, the effect of sorafenib is very modest in advanced HCC. Under optimal conditions, it seems to result in an overall increase in survival of 2 to 3 months.

References

Bao Y, Han J, Hu FB, et al. Association of nut consumption with total and cause-specific mortality. *N Engl J Med.* 2013;369:2001–2011.

Cheng A-L, Kang Y-K, Chen Z, et al. Efficacy and safety of sorafenib in patients in the Asia-Pacific region with advanced hepatocellular carcinoma: a phase III randomised, double-blind, placebo-controlled trial. *Lancet Oncol.* 2009;10(1):25–34.

Fraser GE, Sabaté J, Beeson WL, Strahan TM. A possible protective effect of nut consumption on risk of coronary heart disease: the Adventist Health Study. *Arch Intern Med.* 1992;152:1416–1424.

Hursting SD, Dunlap SM, Ford NA, Hursting MJ, Lashinger LM. Calorie restriction and cancer prevention: a mechanistic perspective. *Cancer Metab.* 2013;1(1):10.

Llovet JM, Ricci S, Mazzaferro V, et al. Sorafenib in advanced hepatocellular carcinoma. *N Engl J Med.* 2008;359(4):378–390. doi:10.1056/NEJMoa0708857.

Louafi S, Boige V, Ducreux M, et al. Gemcitabine plus oxaliplatin (GEMOX) in patients with advanced hepatocellular carcinoma (HCC): results of a phase II study. Cancer. 2007;109:1384–1390.

Mirkin G. *Nuts do not prevent heart attacks. Arch Intern Med.* 1993;153(1):125–125.

Scanga A, Kowdley K. Sorafenib: A glimmer of hope for unresectable hepatocellular carcinoma? *Hepatology.* 2009;49(1):332–334.

Seyfried T. *Cancer as a Metabolic Disease.* Hoboken: Wiley; 2012.

Ralph W. Moss, PhD, is the author of 12 books on cancer-related topics. The former science writer at Memorial Sloan-Kettering Cancer Center, for 35 years Moss has investigated the validity of many cancer treatments. He currently directs the *Moss Reports*, a library of reports for patients on over 200 different cancer diagnoses.

◆

Environmental Medicine Update

by Marianne Marchese, ND
www.drmarchese.com

Breast Lumps: Clinical Pearls and Perils

Introduction

Breast problems are a major reason why women visit their primary care physicians. Breast diseases in women constitute a spectrum of benign and malignant disorders. The most common breast problems for which women consult a physician are breast pain, nipple discharge, and a palpable mass. When a woman finds a breast lump, it often causes worry and distress even though most are benign. Proper evaluation and workup of a breast mass are key to diagnosis and treatment

Breast Lumps

Normal glandular tissue of the breast is nodular. This is a general pattern or consistency of the breast that includes persistent lumpiness which is generally not abnormal when it is related to the menstrual cycle. Dominant masses are characterized by persistence throughout the menstrual cycle.

Common tumors and masses include:

- cysts
- nodularity or glandular
- fibroadenoma
- galactoceles
- duct ectasia
- phyllodes tumor
- fat necrosis
- intraductal papilloma
- sclerosing adenosis
- lipoma
- hamaratoma
- diabetic mastopathy
- breast cancer

A **cystic** breast mass a common cause of dominant breast lumps. It may occur at any age but is uncommon in postmenopausal women, fluctuates with menstrual cycle, and is well demarcated from the surrounding tissue. It is characteristically firm and mobile and may be tender and difficult to differentiate from solid mass. **Fibrocystic** breast disease is the most common of all benign breast disease and is seen in women between ages 20 and 50. 50% of women with fibrocystic changes have clinical symptoms and 53% have histologic changes. Women may present with bilateral cyclic pain, breast swelling, palpable mass, and heaviness.[1] **Fibroadenoma** is the second most common benign breast lesion. It usually presents as a well-defined mobile mass, is commonly found in women between ages 15 and 35 years, and is thought to be due to hormonal influence. Fibroadenomas may increase in size during pregnancy or with estrogen therapy. They can range from 5 cm to 20 cm in diameter.[2,3] Complex fibroadenomas contain other proliferative changes such as sclerosing adenosis, duct epithelial hyperplasia, and epithelial calcification and are associated with slightly increased risk of cancer.[2,3] A **galactocele** is a milk-filled cyst from overdistension of a lactiferous duct. They presents as a firm, nontender mass in the breast, commonly in upper quadrants beyond areola.

Pearl: Diagnostic aspiration of a galactocele is often curative.

Duct ectasia is generally found in older women. Dilatation of the subareolar ducts can occur. A palpable retroareolar mass, nipple discharge, or retraction can be present. **Phyllodes** tumors are rare, mostly benign tumors that grow rapidly. 1 in 4 is malignant; 1 in 10 metastasizes.

➤

➤

They create bulky tumors that distort the breast and may ulcerate through the skin due to pressure necrosis. The tumor has a smooth, sharply demarcated texture and typically is freely movable. It is a relatively large tumor, with an average size of 5 cm. However, lesions of more than 30 cm have been reported.[4] **Fat necrosis** is rare and secondary to injury or trauma. It can form after biopsy or surgery of the breast. It is a tender, ill-defined mass and occasionally presents with skin retraction. **Intraductal papilloma** is a benign growth within the ductal system and presents as bloody nipple discharge.[1]

Pearl: Excision is the only way to differentiate intraductal papilloma from carcinoma.

Sclerosing adenosis is a benign condition of the breast in which extra tissue develops within the breast lobules. This is sometimes placed under the category of borderline breast disease. Many women with sclerosing adenosis experience recurring pain that tends to be linked to the menstrual cycle. Clinically it is not palpable in 80% of the cases, while in some cases, it might cause skin retraction.[5] A breast **lipoma** is a benign breast lesion composed of fat cells. Patients may present with a painless palpable breast lump that is soft and mobile. Fine needle biopsy of these lesions reveals fat cells with or without normal epithelial cells.

Pearl: Mammography and ultrasound scanning of a lipoma are usually negative, unless it is large.

Hamartoma of the breast is an uncommon benign tumorlike nodule, also known as fibroadenolipoma, lipofibroadenoma, or adenolipoma. It is composed of varying amounts of glandular, adipose, and fibrous tissue. Clinically, hamartoma presents as a discrete, encapsulated, painless mass. While it can present as a painless soft lump, it may also present as unilateral breast enlargement without a palpable lump. This lesion can be very easily underestimated if the clinical finding of a distinct lump or breast asymmetry and the imaging features are not interpreted thoroughly.[6] **Diabetic mastopathy** is noncancerous lesions in the breast most commonly diagnosed in premenopausal women with type 1 diabetes. Symptoms may include hard, irregular, easily movable, discrete, painless breast mass(es).[7] The prevalence of diabetic mastopathy has been found to be <1% of benign breast diseases, but prevalence can range from 0.6% to 13% in type 1 diabetics.

Peril: Diabetic mastopathy is infrequently encountered since breast examination is not performed routinely in younger diabetic patients.

Physical examination

A complete clinical breast examination (CBE) includes an assessment of breasts and the chest, axillae, and regional lymphatics. In premenopausal women, the CBE is best done the week following menses, when breast tissue is least engorged. With the patient in an upright position, the physician visually inspects the breasts, noting asymmetry, obvious masses, and skin changes, such as dimpling, inflammation, rashes, and unilateral nipple retraction or inversion. Next, the physician thoroughly palpates breast tissue in supine with one arm raised. Nipple discharge is not elicited on CBE, as abnormal worrisome nipple discharge is typically spontaneous and unilateral. CBE sensitivity can be improved by longer duration (i.e., 5 to 10 minutes) and increased precision (i.e., using a systematic pattern, varying palpation pressure, and using three finger pads and circular motions). CBE can detect up to 44% of cancers, up to 29% of which would not have been detected by mammography.[8] A palpable breast mass is considered dominant if there is a 3-dimensional lesion distinct from the surrounding tissues and asymmetric relative to the other breast.[9]

Pearl: Abnormalities detected on physical examination in women over 40 should be regarded as possible cancers until they are documented to be benign.[10]

Standard Workup

Mammography is the standard for the evaluation of breast lumps, yet 10% to 30% of breast cancers may be missed at mammography. Possible causes for missed breast cancers include dense parenchyma obscuring a lesion, poor positioning or technique, perception error, incorrect interpretation of a suspect finding, subtle features of malignancy, and slow growth of a lesion. Steps to improve accuracy of mammography include performing diagnostic instead of screening mammography, reviewing clinical data, and using ultrasound to help assess a palpable mass.[11]

Ultrasonography is recommended in women under 35 years old, and both ultrasonography and mammography are recommended in those 35 years old or above. Women with dense breast tissue will require mammogram with ultrasound.[12] Often breast magnetic resonance imaging (MRI) is used as an additional diagnostic tool, either when other imaging is negative and there is a palpable mass, or to differentiate size of mass found on other imaging. Screening MRI is recommended for women with an approximately 20% to 25% or greater lifetime risk of breast cancer, including women with a strong family history of

breast or ovarian cancer and women who were treated for Hodgkin's disease.[13] Screening with both MRI and mammography might rule out cancerous lesions better than mammography alone in women who are known or likely to have an inherited predisposition to breast cancer. No matter what method of imaging is utilized, a palpable breast lump confirmed with imaging will be biopsied for diagnosis and to rule out breast cancer.

Pearl: For a palpable mass on CBE, order a diagnostic mammogram with ultrasound.

Peril: Mammogram alone is not adequate for women with dense parenchyma.

Nonstandard Workup

Some women refuse standard imaging in the workup of breast lumps due to fears of radiation exposure associated with mammography and various other reasons. They often ask if alternative testing methods exist that might help determine if a breast mass is benign or malignant. Testing for **cadherins** might be one of those methods. Cadherins are cell–cell adhesion glycoproteins that play an essential role in development and maintenance of adult tissues and organs. The expression of P-cadherin is restricted only to basal or lower layers of epithelia, including prostate and skin and also to breast myoepithelial cells (MECs).[14] Normal breast ducts and lobules comprise two epithelial layers. Loss of the outer MEC layer is hallmark of infiltrating carcinomas of the breast. MEC layer is retained in most benign breast masses. A recent study looked to evaluate the expression of P-cadherin as MEC marker in the differential diagnosis of benign and malignant breast lesions. Immunohistochemical staining was done using P-cadherin-specific antibody on formalin fixed paraffin-embedded sections of 25 benign and 15 malignant breast lumps. All 25 cases of benign breast lesions showed positive P-cadherin immunostaining, while only 4 out of 15 cases of infiltrating ductal carcinoma showed positive immunostaining for P-cadherin. P-cadherin immunoreactivity was seen in 100% of benign cases, whereas only 27% of malignant cases were P-cadherin immunoreactive.[14] This may be a useful marker in the differential diagnosis of breast lesions wherever there is confusion in diagnosis with routine methods.

Breast **thermography** is a noninvasive and nonionizing medical imaging. Thermography produces an infrared image that shows the patterns of heat and blood flow on or near the surface of the body. It is temperature dependent. Cancerous and precancerous tissues have a higher metabolic rate, resulting in growth of new blood vessels supplying nutrients to the fast-growing cancer cells. As a consequence, the temperature of the area surrounding the precancerous and cancerous breast tissue is higher when compared with the normal breast tissue temperature. Thermogram may be useful as an additional screening tool to determine whether a breast lump is benign or cancerous but not in differentiating various benign breast masses. As a screening for breast cancer, it is controversial. A recent study compared thermogram with mammogram and found sensitivity for thermography as a screening tool was 25% (specificity 74%) compared with mammography. Sensitivity for thermography as a diagnostic tool ranged from 25% (specificity 85%) to 97% (specificity 12%) compared with histology.[15]

The **HALO Mamo Cito Test** is a relatively new method of determining whether a breast mass is benign or cancerous. It is hailed as the equivalent to a cervical Pap smear test. Nipple fluid aspirate is collected and sent for cytology in order to evaluate the cellularity for the diagnosis of breast cancer. Several studies support its use in breast cancer detection and several studies cite its inaccuracy.[16,17]

Blood tests are another nonstandard method of evaluation. The **dtectDx Breast** test looks at blood-based biomarkers that are highly associated with early breast cancer development. It is not a genetic test for breast cancer. It analyzes serum concentrations of five protein biomarkers – interleukin-8 (IL-8), IL-12, vascular endothelial growth factor, carcinoembryonic antigen, and hepatocyte growth factor – via enzyme-linked immunosorbent assay to detect breast cancer. A study in the *Journal of Clinical Oncology* has demonstrated positive outcomes using dtectDx Breast.[18] This test is currently undergoing further clinical trials to

➤

➤

establish an acceptable algorithm for generation of a single numerical score from the combination of the 5 cancer biomarkers that comprise the dtectDx Breast assay, and to define a numerical score cutoff that differentiates malignant from nonmalignant breast cancer in this population of women.

Peril: Nonstandard breast evaluation methods should not be used in place of standard diagnostic tests, but in addition.

Environmental Factors

Chemicals in food, water, cleaning products, and cosmetics are known to have endocrine-disrupting properties and are linked to breast cancer.[19] Studies of cell cultures, laboratory animals, and accidentally exposed humans do show that chemicals can produce estrogenic, androgenic, antiandrogenic, and antithyroid actions in the body. In addition to breast cancer, these endocrine-disrupting chemicals (EDCs) are linked to benign breast masses such as fibrocystic breast disease and fibroadenomas.[19–21]

Pearl: EDCs should be considered in the evaluation and prevention of breast lumps.

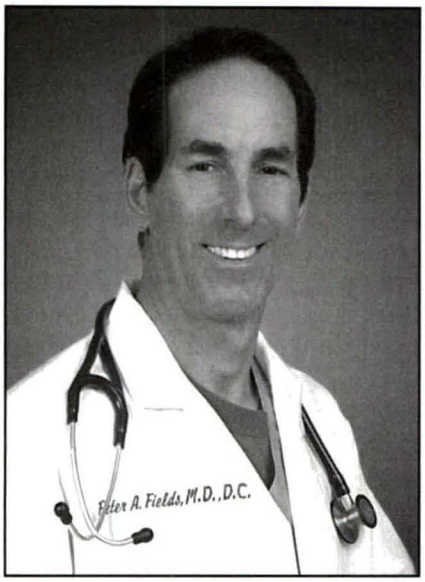
Summary

Palpable breast masses are common and usually benign, but efficient evaluation and prompt diagnosis are necessary to rule out malignancy. Most breast lumps that women or clinicians feel aren't cancer. It's more common for them to be cysts, fibrocystic disease, or fibroadenomas. Some lumps commonly come and go during a woman's menstrual cycle. Men can have breast lumps and breast cancer as well and should be evaluated the same. Patients should be evaluated initially with a detailed clinical history and physical examination. Most presenting with a breast mass will require imaging and further workup to exclude cancer and address symptoms. Education is important in the prevention and treatment of most breast lumps.

Notes

1. Sabel MS. Overview of benign breast disease. UpToDate. November 14, 2008.
2. Dupont WD et al. Long term risk cancer in women with fibroadenoma. *N Eng J Med.* 1994;331:10.
3. Carty NJ et al. Management of fibroadenoma of the breast. *Ann R Coll Surg Engl.* 1995:77:127.
4. Yohe S, Yeh IT. "Missed" diagnoses of phyllodes tumor on breast biopsy: pathologic clues to its recognition. *Int J Surg Pathol.* 2008;16(2):137–142.
5. Gill HK, Ioffe OB, Berg WA. When is a diagnosis of sclerosing adenosis acceptable at core biopsy? *Radiology.* 2003;228(1):50–57.
6. Tse GMK, Law BKB, Ma TKF, et al. Hamartoma of the breast: a clinicopathological review. *J Clin Pathol* 2002;55:951–954.
7. Keyoung JA Zuurbier CA, Tsangaris TN, Azumi N, Makariou E. Diabetic Mastopathy. *Appl Radiol.* 2003;32(9). http://www.medscape.com/viewarticle/462248_3. Accessed Nov. 9, 2013.
8. Barton MB, Harris R, Fletcher SW. The rational clinical examination. Does this patient have breast cancer? The screening clinical breast examination: should it be done? How? *JAMA.* 1999;282:1270–1280.
9. Salzman B et al. Common breast problems. *Am Fam Physician.* 2012;86(4):343–349.
10. Morrow M. The evaluation of common breast problems. *Am Fam Physician.* 2000;61(8):2371–2378.
11. Majid AS et al. Missed breast carcinoma: pitfalls and pearls. *Radiographics.* 2003;23(4):881–895.
12. Chairat R et al. Are both ultrasonography and mammography necessary for cancer investigation of breast lumps in resource-limited countries? *ISRN Oncol.* 2013 Aug 28, 2013:257942. doi:10.1155/2013/257942.
13. Saslow D et al. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. *CA Cancer J Clin.* 2007;57(2):75–89.
14. Bhatia Y. P-cadherin as myoepithelial cell marker for differential diagnosis of benign and malignant breast lesions. *Indian J Pathol Microbiol.* 2013;56:6–9.
15. Fitzgerald A, Berentson-Shaw J. Thermography as a screening and diagnostic tool: a systematic review. *N Z Med J.* 2012 Mar 9;125(1351):80–91.
16. Filassi JR et al. Can breast nipple fluid collected with automated aspiration and preserved in based-liquid solution improve the cytological samples? *Acta Cytol.* 2013;57(3):276–280.
17. Elsheikh TM. Does the new automated "HALO" nipple aspiration fluid system really deliver as promised? The answer is "No, but...": A literature review of the role of breast fluid cytology in cancer risk assessment. *Diagn Cytopathol.* 2009 Sep;37(9):699–704.
18. Henderson M et al. DtectDx Breast: A serum biomarker test for breast cancer detection used in conjunction with traditional mammography screening. *J Clin Oncol.* 2013;31(suppl 26; abstr 18). http://meetinglibrary.asco.org/content/119603-135 11/10/2013.
19. Darbre PD. Environmental oestrogens, cosmetics and breast cancer. *Best Pract Res Clin Endocrinol Metab.* 2006;20:121–143.
20. Bidgoli SA et al. Association between glycodelin and aryl hydrocarbon receptor in Iranian breast cancer patients: impact of environmental endocrine disrupting chemicals. *Asian Pac J Cancer Prev.* 2011;12(9):2431–2435.
21. El-Bayoumy K et al. Comparative tumorigenicity of benzo[a]pyrene, 1-nitropyrene and 2-amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine administered by gavage to female CD rats. *Carcinogenesis.* 1995;16(2):431–434.

Dr. Marchese is the author of *8 Weeks to Women's Wellness: The Detoxification Plan for Breast Cancer, Endometriosis, Infertility, and other Women's Health Conditions.* Dr. Marchese graduated from the National College of Naturopathic Medicine. She maintains a private practice in Phoenix, Arizona, and teaches gynecology at Southwest College of Naturopathic Medicine. She was named in *Phoenix Magazine*'s 2010 Top Doctor Issue as one of the top naturopathic physicians in Phoenix. Dr. Marchese is a contributing author for the *Townsend Letter* and lectures on topics related to women's health and environmental medicine throughout the US and Canada. She is past vice president of the Arizona Naturopathic Medical Association and current member of the board of directors for the Council on Naturopathic Medical Education. ◆



Orthopedic/Sports Medicine

by Peter A. Fields, MD, DC
www.DrFields.com

Elbow Injuries: What To Do About Them

At one time or another, about 15% of the population (more than 50 million people) in the US will have some level of chronic elbow pain. The elbow is a very versatile joint and the only one in the body that allows two bones to cross over each other (more on this later).

Elbow injuries happen in a variety of situations; sports injuries are the most common cause, but they can happen with recreational activities, occupational activities (including repetitive stress injuries), working around the home or in the yard, falls, and more. While fractures can happen, many injuries to the elbow do not cause this; it is usually the ligaments and the tendons that become injured. And even if the elbow is dislocated (which is not uncommon), this too will disrupt the continuity of ligaments and tendons around it. While some pains will go away within a few days, many do not and eventually become chronic.

Anatomy

The elbow, like the shoulder, is a confluence of three bones: the ulna, radius, and humerus. There are three articulations that make up the elbow joint. The first two are the humeroulnar and humeroradial joints that are articulations between the humerus and the ulna and radius, respectively. The third one, the radioulnar joint, is a rotational articulation that allows for the radius to rotate over the ulna, making this a very special articulation. There are many ligaments that help to stabilize the elbow. The three main ones are the ulnar collateral ligament, radial collateral ligament, and annular ligament. The last is a circular ligament that essentially surrounds the head of the radius (which is round) and maintains its contact with the radial notch of the distal end of the ulna. The elbow tendons are used to attach muscles to bones and are basically divided into two functions: flexors and extensors. The main flexors are the brachialis, brachioradialis, and biceps brachii. The lone extensor is the triceps. The elbow is also encased by a joint capsule that has a synovial member.

How Does Elbow Pain Develop?

The annular ligament, whose function is to attach the radius to the ulna, is responsible for about 80% of chronic elbow pain. There are increasing demands placed on the hands to perform repetitive tasks, so the annular ligament is stressed every day and will eventually become lax and a source of chronic pain. And with popularity of computers and hand-held devices continuing to grow, the demands on the annular ligament are increasing exponentially.

Elbow pain can also be caused by the two collateral ligaments that can be sprained. The ulnar collateral ligament supports the inside of the elbow and is responsible for holding the ulna to the distal end of the humerus. The ligament that supports the outside of the elbow is the radial collateral ligament. It holds the radius to the distal end of the humerus. With the increased popularity of golf (ulnar collateral ligament) and the ongoing popularity of tennis (radial collateral ligament), these two ligaments are frequently stressed and therefore can cause injuries.

Besides ligament sprains, tendon injuries can also cause elbow problems. When acute, this is called tendonitis. When the inflammation goes away (as in chronic problems) but the tendon is still injured, then it is call tendonosis. Lateral epicondylitis (tennis elbow) and medical epicondylitis (golfer's elbow) are two very common causes of elbow pain. Many other sports involve our arms such as swimming, basketball, baseball, bowling, skiing, surfing (paddling), and cycling. In addition to sports, other activities that can cause elbow pain include gardening, using a screwdriver, painting, sculpting, house cleaning, and walking the dog. Other causes of elbow pain include bursitis, arthritis, elbow strains, and infections.

➤

➤

What Are the Symptoms of Elbow Pain?

Although sudden injury can cause elbow pain, most elbow injuries are insidious and evolve over time so that no one specific event can be held accountable and individuals may not recall having a specific injury that caused the problem. Since many sports and activities involve repetitive motions, when one finally has symptoms of elbow dysfunction, this is likely the straw that broke the camel's back rather than that one time causing the problem. Common symptoms include pain, swelling, loss of range of motion, tingling, weakness, numbness, or changes in temperature or color.

Treatments

When someone presents to an orthopedic surgeon with elbow pain, he is usually told to ice it. Using ice may help alleviate the pain in the short term, but it will also impede healing to that area, as cold constricts blood flow, which is good for healing. Other traditional therapies such as physical therapy, exercise, and massage maybe be offered. This may resolve the elbow injury. It may even be helped by a short or extended course of anti-inflammatory medicines (NSAIDs). If these do not resolve the problem, then the next step may be a steroid injection. Steroids (e.g., cortisone) only worsen the situation, since the pain relief is usually only temporary and the steroid itself will weaken the ligaments, tendons, cartilage, and even bone.

After this, the next step recommended is surgery. Since the elbow is a smaller joint compared with the knee and shoulder, it is also involved with fine movements, which makes surgery on it even more delicate. Surgery for an elbow usually involves taking something out. If the surgeon takes tissue out such as part of a tendon, ligament, or cartilage, it can never be put back. If you change structure, you change function. Following elbow surgery, one must wear a sling and have the elbow immobilized so that one cannot turn one's hand over. Then a course of physical therapy is usually prescribed, usually two to three times a week for several months. Quite often pain medicines are also taken for many weeks. The total repair time could be more than 3 to 6 months.

A few years ago a 60-year-old man presented to my office with elbow pain, which he had experienced for over 18 months. He had been to an orthopedic surgeon and over the past 18 months was given oral NSAIDs. When one did not work, he was given a stronger one. After this, he had three cortisone injections within a 12-month period. He had also been doing physical therapy during this time and had massages and acupuncture to help alleviate the pain. All of the above only provided temporary relief. All this time he was unable to work out at the gym and was becoming increasingly frustrated. He finally went back to his surgeon and asked if there was a surgery that could fix his elbow. He was told that "total elbow replacement" would be his next option. He did not really understand what this was, so he asked what exactly was done in this type of surgery. He was told, "In a nutshell, we cut your elbow out and build you a new one." He was so shocked when heard this, he immediately left the orthopedic surgeon's office. That afternoon he had an appointment with his chiropractor for his neck. When he told her about the situation with his elbow, she told him to come see me. She had recently heard me lecture and thought that I might have a nonsurgical option for him. After a thorough history and physical exam, I told him that he was an excellent candidate for prolotherapy. He was ecstatic to learn about a nonsurgical option, as he did not want surgery. After only three treatments, he was able to start working out. And after six treatments, his pain was completely gone and he could work out without any discomfort!

Conventional medical treatments may help relieve the symptoms of elbow pain, but they do not address the root of the problem. By strengthening structural weaknesses in the body with regenerative medicine treatments such as prolotherapy, chronic elbow pain may be alleviated – permanently.

Prolotherapy proliferates/regenerates fibroblasts so that the collagen tissue that makes up structure of the elbow will be repaired – naturally. This makes the area more vibrant and stronger than it was when injured, and most people return to full function without surgery.

Total prolotherapy (dextrose, PRP, and stem cell) is an excellent nonsurgical alternative for ligament and tendon dysfunction of the elbow problems mentioned in this column. It fixes not only the effects (pain, decreased range of motion, etc.) but also the cause of the problem.

The advantages of prolotherapy over surgery are:

1. no infection
2. no device failure
3. no wound not healing
4. no needless time on pain meds
5. it is your own body healing itself
6. when it is fixed, it is fixed for good!

I am not against surgery; what I am against is unnecessary orthopedic surgeries' being done before other nonsurgical procedures are tried.

Remember that surgery can always be done, but never undone.

Peter A. Fields, MD, DC, "The Athletic Doc," is an expert in the field of orthopedic/sports medicine. He is both a board-certified medical physician and chiropractor, one of only a handful of physicians in the US with both these degrees. Dr. Fields is the director of the Pacific Prolotherapy and Medical Wellness Center in Santa Monica, CA. Orthopedic/sports medicine is the main focus of his practice. He also practices holistic medicine, which includes bioidentical hormones, anti-aging medicine, IV nutritional therapy, IV chelation therapy, natural alternatives to prescription medicines, and more.

◆

Calendar

Please submit an announcement of your event 90 days in advance. Event publication must be limited to 25 words or less. Multiple event listings require paid advertising.

FEBRUARY 15-16: BASTYR UNIVERSITY presents FACIAL DIAGNOSIS: New Tools for Clinical Practice in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

FEBRUARY 20-22: INTEGRATIVE HEALTHCARE SYMPOSIUM 2014 in New York, New York. CME credits & ANCC contact hours. CONTACT: http://www.ihsymposium.com/annual-conference/

FEBRUARY 22-23: BASTYR UNIVERSITY presents THE ART & PRACTICE OF NARRATIVE MEDICINE in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

FEBRUARY 24-27: WALSH RESEARCH INSTITUTE MEDICAL PHYSICIAN TRAINING AND OUTREACH CLINIC in Greensboro, North Carolina. For MDs and DOs seeking to learn about biochemical imbalances and advanced nutrient therapy methods for mental and behavioral disorders through actual patient evaluations. Patient outreach clinic on **FEBRUARY 25-27** for those with behavioral disorders, ADHD, anxiety, clinical depression, bipolar, schizophrenia, Alzheimer's disease and Parkinson's Disease. CONTACT: 630-400-3400; sue@walshinstitute.org ; http://www.walshinstitute.org/outreach.asp#USNC

FEBRUARY 26: ADVANCED CLINICAL APPLICATIONS WITH PLEO SANUM in Tempe, Arizona. CONTACT: 1-888-415-0535; http://www.Terra-Medica.com

FEBRUARY 27-MARCH 2: PARACELSUS BIOLOGICAL MEDICINE CERTIFICATE (Module 1 & 2) with Thomas Rau, MD in Tempe, Arizona. Attendees should already be familiar with isopathic and homeopathic principles. CONTACT: 1-888-415-0535; http://www.Terra-Medica.com

FEBRUARY 28-MARCH 1: NORTH CAROLINA INTEGRATIVE MEDICAL SOCIETY CONFERENCE in Greensboro, North Carolina. CONTACT: http://www.ncims.com

FEBRUARY 28-MARCH 1: FORDHAM PAGE NUTRITION STUDY CLUB – Hormones & Supplements That Can Change Your Life with Jorge Flechas, MD @ Crowne Plaza Dulles Airport in Washington DC. CONTACT: 800-832-9901

MARCH 6-8: ANNIE APPLESEED PROJECT presents its 8th EVIDENCE-BASED COMPLEMENTARY & ALTERNATIVE CANCER THERAPIES CONFERENCE in West Palm Beach, Florida. CONTACT: 561-749-0084; http://www.annieappleseedproject.org/index.php/cancer-clinics/cancer-therapies-conference-2014

MARCH 7-9: KLINGHARDT ACADEMY presents AUTONOMIC RESPONSE TESTING (Level 3) in New York City, New York. Refresher course (Levels 1 & 2) on **MARCH 6**. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

MARCH 7-9: AIH-SHMA-NYMC SEMINAR – PREDICTIVE HOMEOPATHY: Case Taking, Follow-Ups, Theory of Suppression in New Orleans, Louisiana. AMA PRA Category 1 credits. CONTACT: 888-445-9988; http://www.homeopathyusa.org

MARCH 12-13: INTEGRATIVE APPROACHES TO REVERSE EYE DISEASE FOR THE NON-OPTHALMOLOGIST in Nashville, Tennessee. Precedes ICIM Congress. CONTACT: wendy@icimed.com; http://www.IntegrativeMedicineConference.com

MARCH 13: HOMEOPATHIC REMEDIES AND SUPER FOODS, ESSENTIAL FOR HEALTH AND LONGEVITY in Nashville, Tennessee. Precedes ICIM Congress. CONTACT: wendy@icimed.com; http://www.IntegrativeMedicineConference.com

MARCH 13-16: PHYSICIANS' ROUND TABLE – Accentuating the HEAL in Health in Tampa, Florida. The best in exhibitors, 24 expert speakers. CMEs. CONTACT: Sue Vogan, 717-254-1953; peerobmagazine@aol.com

MARCH 13-16: AMERICAN ACADEMY OF ANTI-AGING MEDICINE FELLOWSHIP MODULES, BHRT SYMPOSIUM & BOARD CERTIFICATION EXAMS in San Francisco, California. Also, **SEPTEMBER 10-13** in Phoenix, Arizona. CONTACT: 888-997-0112; http://www.A4M.com

MARCH 13-16: 3RD LATIN AMERICA CONGRESS ON CONTROVERSIES TO CONSENSUS IN DIABETES, OBESITY, & HYPERTENSION in Panama City, Panama. CONTACT: codhyLA@codhy.com; http://codhy.com/LA/2014/

MARCH 14-16: ICIM's 58TH CONGRESS – Past, Present and Future of Medicine in Nashville, Tennessee. CONTACT: wendy@icimed.com; http://www.IntegrativeMedicineConference.com

MARCH 14-16: MERGING MEDICINE XVI: Integrative Neuro-Psychology: Natural Medicine Solutions for Mental Health Disorders in Berkeley, California and live webinar. Presented by the California Naturopathic Doctors Association. Estimated 15.25 CEs. CONTACT: http://www.calnd.org/mm16

MARCH 15-16: BASTYR UNIVERSITY presents AYURVEDIC PULSE ASSESSMENT: INTERNAL ORGAN PULSE & METHODS OF HEALING WEAK ORGANS in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

MARCH 19: WISDOM DAY 2014 SEMINAR in Washington DC. How to help people have stronger physical bodies so that the mind has a firmer foundation. Precedes 4-day Psychotherapy Networker Symposium 2014. CONTACT: http://www.dcnn.pro/WisdomDay2014.en.html

Calendar

➤

MARCH 20-22: DR. THIERRY HERTOGHE SEMINAR in Brussels, Belgium. Male and female hormone problem solving; hormone & nutritional therapies for psychological disorders; obesity management. CONTACT: +32 2 379 34 42; charlotte@hertoghe.eu; http://www.hertoghe.eu

MARCH 20-22: INTERNATIONAL ACADEMY OF ORAL MEDICINE & TOXICOLOGY (IAOMT) SPRING MEETING in Vancouver, British Columbia, Canada. CONTACT: http://www.iaomt.org

MARCH 20-23: PRO-AGING EUROPE CONGRESS in Brussels, Belgium. CONTACT: Charlotte Jonckheere, wosaam@wosaam.ws; +32 (0)2 379 34 42

MARCH 20-23: PAN AMERICAN ALLERGY TRAINING COURSE & SEMINAR in Plano, Texas. CONTACT: http://www.paas.org/attachments/File/20131125_Spring2014TCSforWeb_PRELIM.pdf

MARCH 22: RUBIMED THERAPIST TRAINING (Level 1) in San Francisco, California. Natural remedies for emotional issues. CONTACT: 1-888-415-0535; http://www.Terra-Medica.com

MARCH 26-29: THE AMERICAN ACADEMY OF OZONOTHERAPY ANNUAL MEETING 2014 in Dallas, Texas. CONTACT: 775-450-3766; admin@aaot.us; http://www.regonline.com/aaot2014

MARCH 28-30: CARDIOMETABOLIC ADVANCED PRACTICE MODULE- Transforming the Assessment, Prevention, and Management of Chronic Metabolic and Cardiovascular Disorders in Boston, Massachusetts. CONTACT: https://www.functionalmedicine.org/Cardiometabolic

APRIL 4-6: 9TH ANNUAL JOINT AMERICAN HOMEOPATHIC CONFERENCE in Long Beach, California. Presented by the National Center for Homeopathy. CONTACT: http://www.homeopathycenter.org

APRIL 4-6: DESERET BIOLOGICALS SYMPOSIUM in Lake Buena Vista, Florida. CME credits available. CONTACT: 800-827-9529; bill@desbio.com; http://www.desbio.com/symposium

APRIL 4-6: AMERICAN ACADEMY OF ANTI-AGING MEDICINE FELLOWSHIP MODULES & IV SYMPOSIUM in Denver, Colorado. Also, **OCTOBER 16-18** in New Orleans, Louisiana. CONTACT: 888-997-0112; http://www.A4M.com

APRIL 5-6: KLINGHARDT ACADEMY presents AUTONOMIC RESPONSE TESTING (Level 1) in Jenkintown, Pennsylvania. Also, **APRIL 12-13** in Kenmore, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

APRIL 5-12: WALSH RESEARCH INSTITUTE 11TH MEDICAL PRACTITIONER TRAINING PROGRAM in Gold Coast, Australia. Organized and managed by Bio-Balance Health Association with William J. Walsh, Ph.D., Judith Bowman, M.D., and Albert Mensah, M.D. CONTACT: http://www.biobalance.org.au/events

APRIL 6: HOMEOPATHIC MEDICAL ASSOCIATION (UK) AGM & ANNUAL CONFERENCE in London, England, United Kingdom. CONTACT: 01474 560336; http://www.the-hma.org

APRIL 10-12: 37TH ANNUAL HOLISTIC DENTAL ASSOCIATION SYMPOSIUM – Healing Through Dentistry in Dallas, Texas. CE credits. CONTACT: 305-356-7338; director@holisticdental.org

APRIL 11-12: BASTYR UNIVERSITY presents TREATING EATING DISORDERS-CONCEPTS & APPLICATIONS in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

APRIL 11-13: SOUTHWEST CONFERENCE ON BOTANICAL MEDICINE in Tempe, Arizona. TCM approaches to inflammation; herbal gastroenterology; acute glaucoma; new studies on *Urtica* (nettle) and more. Herb walks / medicine making. CE credits. Early bird registration March 5. CONTACT: (541) 482-3016; http://www.botanicalmedicine.org

APRIL 11-13: GREAT PLAINS LABORATORY PHYSICIAN EDUCATIONAL WORKSHOP in Kansas City, Missouri. Expand your knowledge of biomedical testing, interpretations, and treatment protocols from organic acids, IgG food allergy, adrenal exhaustion, and other core laboratory evaluations. 24 CME/CEU credits. CONTACT: http://www.greatplainslaboratory.com/home/eng/kc_training.asp

APRIL 25-27: 43RD ANNUAL INTERNATIONAL ORTHOMOLECULAR MEDICINE TODAY CONFERENCE in Vancouver, British Columbia, Canada. Internationally-known physicians and researchers will present sessions on current advances in orthomolecular psychiatry, endocrinology, oncology and general medicine. CONTACT: 416-733-2117; http://www.csom.ca/omt-2014-registration/

APRIL 25-28: 6TH ANNUAL INTERNATIONAL CONGRESS OF ANTIBODIES 2014 in Dalian, China. CONTACT: www.bitlifesciences.com/ica2014/

APRIL 26-27: BASTYR UNIVERSITY presents TREATING TRAUMA WITH CHINESE MEDICINE: UNTYING THE KNOT in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

APRIL 28-29: INTERNATIONAL VITAMIN D CONFERENCE – Vitamin D, Sun and Human Health in Oslo, Norway. CONTACT: http://oslo2014.d-vit.eu/

MAY 2-4: BIOLOGICAL MEDICINE 2014 LYME CONFERENCE in Bellevue, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

Best of Naturopathic Medicine Competition – 2015

The *Townsend Letter* is pleased to announce the Best of Naturopathic Medicine Competition for 2015. Naturopathic students, faculty, researchers, and practitioners are invited to submit papers. Winners will receive an award and publication in the Feb/March 2015 *Townsend Letter*. Papers should be submitted by October 31, 2014. Details for submitting papers to appear in the April, 2014 *Townsend Letter*.

MAY 10-11: BASTYR UNIVERSITY presents AURICULOTHERAPY ADVANCES IN PAIN & ADDICTION TREATMENTS in Kenmore, Washington (near Seattle). Also, **JUNE 6-7**. CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

MAY 14-17: AMERICAN ACADEMY OF ANTI-AGING MEDICINE ANNUAL WORLD CONGRESS, FELLOWSHIP MODULES & BOARD CERTIFICATION EXAMS in Orlando, Florida. Also, **DECEMBER 10-13** in Las Vegas, Nevada. CONTACT: 888-997-0112; http://www.A4M.com

MAY 28-30: METABOLISM, DIET AND DISEASE 2014: Cancer and Metabolism in Washington, D.C. CONTACT: http://www.metabolism-diet-and-disease.com

MAY 29-31: THE INSTITUTE FOR FUNCTIONAL MEDICINE ANNUAL INTERNATIONAL CONFERENCE-Applying Clinical Nutrition Through the Functional Medicine Lens in San Francisco, California. CONTACT: https://www.functionalmedicine.org/AFMCP

MAY 30-JUNE 1: KLINGHARDT ACADEMY presents AUTONOMIC RESPONSE TESTING (Level 2) in Horsham, Pennsylvania. Also, **AUGUST 23-24** in Kenmore, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

MAY 30–JUNE 2: MEDICINES FROM THE EARTH HERB SYMPOSIUM in Black Mountain, North Carolina. Topics: Dietary medicine and cancer; herbs for trauma and loss; environmental influences on autoimmunity; ADHD updates and options; targeting hypercoagulation for cancer. Early bird savings April 17. CONTACT: 541-482-3016; http://www.botanicalmedicine.org

JUNE 7-8: ARIZONA NATUROPATHIC MEDICAL ASSOCIATION SPRING CONFERENCE in Tempe, Arizona. CONTACT: 480-921-3088; http://www.AzNMA.org

JUNE 7-8: BASTYR UNIVERSITY presents ESOTERIC ACUPUNCTURE in Kenmore, Washington (near Seattle). CONTACT: 425-602-3152; http://www.bastyr.edu/continuing-education

JUNE 27-29: KLINGHARDT ACADEMY presents INJECTION TECHNIQUES & SKILLS 2014 – Neural Therapy in Bellevue, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

JULY 11-13: HORMONE ADVANCED PRACTICE MODULE-Re-establishing Hormonal Balance in the Hypothalamic, Pituitary, Adrenal, Thyroid, and Gonadal Axis in Denver, Colorado. CONTACT: https://www.functionalmedicine.org/Hormone

JULY 11-13: DETOX ADVANCED PRACTICE MODULE-Understanding Biotransformation and Recognizing Toxicity: Evaluation and Treatment in the Functional Medicine Model in Denver, Colorado. CONTACT: https://www.functionalmedicine.org/Detox

SEPTEMBER 8-12: APPLYING FUNCTIONAL MEDICINE IN CLINICAL PRACTICE-A Five-Day Foundational Course in Functional Medicine in Scottsdale, Arizona. CONTACT: https://www.functionalmedicine.org/AFMCP

SEPTEMBER 15-17: PREVENTING OVERDIAGNOSIS @ Oxford University in Oxford, United Kingdom. CONTACT: http://www.preventingoverdiagnosis.net

SEPTEMBER 19-21: INTEGRATIVE MEDICINE FOR MENTAL HEALTH 5th ANNUAL CONFERENCE in San Antonio, Texas. Presented by Great Plains Laboratory. CONTACT: 913-341-8949; http://www.greatplainslaboratory.com

SEPTEMBER 22-27: KLINGHARDT ACADEMY WHIDBEY ISLAND RETREAT in Clinton, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

OCTOBER 11-12: NEW KLINGHARDT PROTOCOLS in Kenmore, Washington. Open to non-ART practitioners. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com

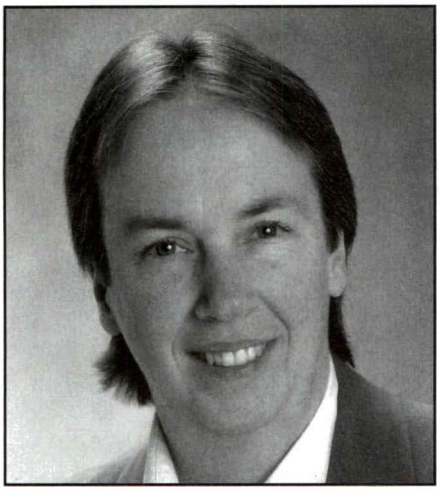
NOVEMBER 6-9: ENERGY REGULATION ADVANCED PRACTICE MODULE in Miami, Florida. CONTACT: https://www.functionalmedicine.org/Energy

NOVEMBER 6-9: GI ADVANCED PRACTICE MODULE-Restoring Gastrointestinal Equilibrium: Practical Applications for Understanding, Assessing, and Treating Gut Dysfunction in Miami, Florida. CONTACT: https://www.functionalmedicine.org/GI

NOVEMBER 8-9: ARIZONA NATUROPATHIC MEDICAL ASSOCIATION FALL CONFERENCE in Tempe, Arizona. CONTACT: 480-921-3088; http://www.AzNMA.org

DECEMBER 5-7: KLINGHARDT ACADEMY presents APPLIED PSYCHONEUROBIOLOGY in Redmond, Washington. CONTACT: phone 908-899-1650; fax 908-542-0961; info@klinghardtacademy.com; http://www.klinghardtacademy.com ◆

Please Support the Advertisers in this Issue



Women's Health Update

by Tori Hudson, ND
womanstime@aol.com

Polycystic Ovarian Syndrome

Polycystic ovarian syndrome (PCOS) is not really classified as a disease, because it is not a specific and constant set of symptoms and physical characteristics. Rather, it is better described as a syndrome, with a collection of symptoms, physical characteristics, and laboratory findings. There are two consistent aspects of PCOS: hyperandrogenism and a lack of or infrequent ovulation. The most common characteristics of PCOS are anovulation or infrequent ovulation usually resulting in amenorrhea or oligomenorrhea, hirsutism and/or acne, multiple ovarian cysts, infertility, and obesity. Over 95% of women who have all three of the classic signs of obesity, hirsutism, and/or irregular menses have PCOS. One of the problems with PCOS is that many women have this syndrome but don't have all three of the classic signs. Not all women with PCOS are obese; in fact, not even 50%. Many PCOS women are of normal weight or even underweight, have no excess hair growth on the face of chest or legs, and may even have pretty regular menses.

The current diagnostic criteria from the 2003 Rotterdam PCOS consensus workshop are that at least two of the following three features must exist (and exclusion of other etiologies of their hyperandrogenism and/or amenorrhea/oligomenorrhea):

- oligo- or anovulation
- clinical and/or biochemical signs of hyperandrogenism
- polycystic ovaries (>12 follicles 2–9 mm or volume >10 ml)

In 2005, the Androgen Excess Society and its task force published a paper that concluded that PCOS should be considered first to be a disorder of androgen excess[1]:

- hyperandrogenism: hirsutism and/or hyperandrogenemia
- ovarian dysfunction: oligo-anovulation and/or polycystic ovaries
- exclusion of other androgen excess or related disorders.

So many variables exist with this syndrome, it's no wonder that it can be hard to come up with a definitive diagnosis. Manifestations of hyperandrogenism include not only hirsutism and acne, but also hair thinning. And not all PCOS women are infertile because there can be random unpredictable ovulation. Yet, PCOS is likely the single most common cause of a lack of ovulation, leading to abnormal menstrual cycles and infertility

An important feature of PCOS is that there are two prominent hormonal problems: hyperinsulinism and/or insulin resistance and elevated androgens. Testosterone testing, by any means, is not a very accurate laboratory test in women. Because women have such small amounts, the testing technology has not been able to accurately detect them. In addition, the range of normal has not been clearly established, making testing total testosterone or free testosterone levels of limited value.

The underlying cause of PCOS is complex and not completely clear. What we currently know is the following: (1) elevated secretions of androgens from the ovaries and/or adrenal glands that overwhelm the body's ability to convert these androgens to estrogen; (2) abnormal ratios of the pituitary hormones, luteinizing hormone (LH) to follicle stimulating hormone (FSH); (3) failure of the monthly maturing of a follicle in the ovaries; (4) a resistance to insulin; and (5) likely a genetically driven defect in the action of insulin. Hyperandrogenism is well established as an etiology and is detected in around 60% to 80% of cases. Insulin resistance is a pathophysiologic mechanism in at least 80% of women with PCOS, and even more severe in those with more severe PCOS, including those who are overweight/obese.[2] Women who meet 2 of 3 criteria for PCOS and are lean or have milder clinical manifestations seem to have less severe hyperinsulinemia and insulin resistance.

Metabolic dysfunctions including abnormalities in lipid levels, insulin and blood sugar levels, and high blood pressure are significant medical problems that can be related to the underlying syndrome of PCOS.

Besides the potential changes including increased body weight, acne, facial hair, hair thinning, the irregular menstrual

cycles, and potential of infertility, there are significant diseases that can result from the underlying syndrome, including an increased risk of cardiovascular disease, type 2 diabetes, and uterine cancer.

Treatment Strategies

Treatment options need to be targeted to the specific clinical presentation, while at the same time addressing the underlying etiologies as well as providing long term prevention strategies for those diseases for which they are at increased risk. The metabolic goals of a holistic natural medicine approach are to (1) lower androgens, (2) inhibit the conversion of testosterone to the more potent dihydrotestosterone, (3) induce regular ovulation, and (4) modify insulin resistance and lower the hypersecretion of insulin.

Diet and exercise are common to both conventional and alternative treatments of PCOS, and lifestyle intervention is the first line of treatment, especially in overweight or obese PCOS patients.[3] It is also important to try to achieve stable weight without weight gain in all women with PCOS, lean or overweight or obese. Fortunately, as little as 5% to 10% weight loss has significant impact on insulin sensitivity, ovulation, menstrual cycles, fertility, and risk factors for cardiovascular disease and type 2 diabetes.[4]

Dietary changes that may improve insulin resistance are the primary emphasis on a reduction of refined carbohydrates and total calories, while increasing the high-fiber foods of vegetables, legumes, and whole grains. Many individuals with PCOS will respond to a diet that is not more than 80 gm/day of carbohydrates, and 60 to 90 gm per day of protein. Several small studies showed similar results for diets with moderately increased protein, low carbohydrates, and low-glycemic-index foods.[5–7] In adolescent girls, lifestyle modification alone can result in a 59% reduction in free androgen index with a 122% increase in sex hormone-binding globulin (SHBG).[8] One study reported a greater weight loss where a high-protein supplement was added to a caloric-restriction diet.[9] This approach is often a very effective strategy, one in which I advise a morning breakfast meal of about 15 to 20 g whey protein powder in soy milk or water + the flaxseeds (see below), + fenugreek powder if able. Carbohydrate restriction versus fat restriction is generally considered productive; however, at least one study has not demonstrated a distinct benefit from calorie-restricted diets that limit carbohydrates rather than fat.[10]

A total caloric reduction of 500 to 1000 kcal/day reduces body weight by 7% to 10% over a 6- to 12-month period. Exercise activity of at least 30 minutes per day can increase weight loss compared with just diet changes alone. However, in my understanding of the literature and clinical experience, 60-plus minutes of aerobic exercise 7 days/week and 20 minutes twice weekly of strength training have much more impact on improving insulin sensitivity and also result in greater success with weight loss.

There are several natural substances that bind to and stimulate SHBG, which then binds some of the testosterone in the bloodstream, which in turn reduces the hyperandrogenism of PCOS. The root of the nettles plant contains many lignans, and these compounds have an affinity to SHBG in humans.[11–13] Nettles root can also affect aromatase inhibition, which could inhibit the conversion of the weaker testosterone to dihydrotestosterone.[14]

Caffeine-containing beverages (coffee; green, black, and oolong teas; and even colas) were seen to have a relationship between intake and increases in SHBG.[15] This then had a favorable effect on hormone levels. As caffeine intake and SHBG increase, estrogen levels decrease. This is just one of the mechanisms by which green tea may have breast health implications and favorably influence the risk of breast cancer.

Flaxseeds and soy are two important foods relevant in a PCOS diet. Flaxseeds contain lignans, which increases SHBG, lowering blood testosterone levels and reducing the hyperandrogenic effects. I recommend 2 tbsp per day of flaxseeds or ground flax meal. I also recommend 1 serving per day of a soy food.

One of the potential significant aspects of PCOS is the unopposed effect of estrogen on the endometrium. This occurs because the ovaries still produce adequate estrogen, but not enough progesterone, due to a lack of ovulation. The uterus then receives what is called unopposed estrogen stimulation. This thickening is called hyperplasia, and the cells over time can become atypical or even malignant. The potential role of soy foods in the diets of women with PCOS may have some contradictions; but it is thought that soy can reduce blood estrogen levels and increase SHBG, and it was found in one study that women with higher-soy diets excrete more than twice the amount of estrogen in their stool, and in another increased the excretion of estrogens in the urine.[16–18] There are indeed other soy studies that do not show the same results.[19] I recommend 1 to 2 servings of a soy food per day, or something equivalent to 50 mg to 100 mg of soy isoflavones daily.

Saw palmetto inhibits the activity of an enzyme, 5-alpha reductase, thereby reducing the conversion of testosterone to dihydrotestosterone, the more potent form. This may have implications in reducing acne, excess facial and body hair, and hair loss from the scalp. Saw palmetto was recently studied as part of a formula and was able to initiate a reduction in hair loss and an improvement in hair density in patients with testosterone-related hair loss.[20]

3.5 g of a licorice root extract standardized to contain 7.6% W.W. glycyrrhizic acid (0.25 g total glycyrrhizic acid per day), q.d. for 2 months, was given to 9 "healthy" women, aged 22 through 26 years. Outcome measures included blood pressure, plasma renin activity (PRA), plasma cortisol, plasma aldosterone, total serum testosterone, androstenedione, 17OH-progesterone (17OHP), and gonadotropins, which were tested at baseline, after 1 and 2 months taking licorice, and 1 month posttreatment. Mean total serum testosterone significantly decreased after 1 and 2 months of treatment (27.8 ± 8.2 vs. 19. ± 9.4 and 17.5 ± 6.4 ng/dL, respectively.[21]

It's interesting to note that this is the first trial to follow up on earlier trials which found that licorice may reduce testosterone secretion in women with polycystic ovary

➤

Endometriosis

by Tori Hudson, ND

Overview and Outline Summary of a Natural Therapeutic Approach

Endometriosis is influenced by multiple mechanisms and etiologies:

- the abnormalities in both cell-mediated and humoral components
- increased cytokine production
- decreased phagocytic activity
- increased protein called ENDO-I (similar to haptoglobin)
- increased interleukin 6
- decreased NK cells
- compromised immune surveillance
- peritoneal fluid: high concentrations of cytokines, growth factors, and angiogenic factors
- once endometriosis lesions: secretion of pro-inflammatory molecules, lipid peroxidation
- oxidants are proposed to stimulate endometrial cell growth
- estrogen receptor issues
- environmental exposures, particularly endocrine disruptors

Keeping those mechanisms and etiologies in mind, as well as the experience of the patient, there are then multiple areas where we can provide intervention:

- general considerations
  - immune modulation
  - reduce inflammation
  - decrease influence of estrogen
  - enhance liver function; detoxification
  - prevent progression of disease
  - decrease oxidative damage
  - inhibition of growth factors
  - antiangiogenesis agents
  - pain relief; symptom relief
  - psychosocial influences and consequences

Consider the following outline for alternative therapeutic interventions:

- Decrease cytokines and increase NK cells:
  - boswellia
  - omega-3 oils
- Increase phagocytosis:
  - astragalus
  - *Coriolus versicolor*
  - *Withania somnifera*
- Antioxidants:
  - flavonoids, especially pine bark
    - E, C, A, selenium, carotenes, melatonin
- Inhibit growth factors:
  - silymarin
  - soy
  - quercetin
- Antiangiogenesis:
  - soy
- Reduce inflammation:
  - *Zingiber officinale*
  - *Scutellaria baicalensis*
  - turmeric
  - flavonoids
  - quercetin
  - high-EPA fish oils
- Estrogen metabolism:
  - DIM
  - soy, flaxseeds
  - fish oils
- Aromatase inhibitors:
  - resveratrol
  - *Agaricus*
  - pomegranate
- Enhance liver function; detoxification:
  - silymarin
  - *Taraxacum* root
  - lipotropic factors
- Pain relief:
  - acute:
    - valerian
    - cramp bark
    - ginger
    - fennel
    - guava
    - essential oils
    - vitamin B3
    - vitamin B6
    - thiamine
    - vitamin C and rutin
    - calcium, magnesium, manganese
  - chronic:
    - turmeric
    - high-EPA fish oils
    - pine bark extract

Endometriosis: Natural Medicine Research on Two Important Products to Consider

Pine Bark

Pine bark is a special standardized extract from the bark of the French maritime pine. It is composed of polyphenols, several phenolic acids, catechins, taxifolin, and procyanidins. In laboratory research, pine bark selectively inhibits matrix metalloproteinases (MMPs), other inflammatory cells, and specifically COX-1 and COX-2. Its role in endometriosis was evaluated in a study of 58 women who were surgically diagnosed with endometriosis and then started on pine bark within 6 months of the surgery after confirming regular menstruation and ovulation for 3 months. Women were randomized to receive either Pycnogenol 30 mg twice daily for 48 weeks or a gonadotropin-releasing hormone agonist (Gn-RHa), leuprorelin acetate depot, 3.75 mg IM 6 times every 4 weeks for 24 weeks. After 4 weeks on pine bark,

syndrome (*Acta Obst Gynecol Jpn*. 1988;40:789–792) and another showing a similar result in hyperandrogenic and oligomenorrheic women.[22]

Calcium and vitamin D are two of the farthest-reaching nutrients that the body needs, affecting muscles, bones, thyroid, brain, heart, hormones, colon, breast, and more. Calcium and vitamin D regulation may also contribute to the development of faulty ovarian follicle development in women with PCOS, resulting in reproductive and menstrual dysfunction.[23] Vitamin D also plays a role in glucose metabolism and is commonly deficient in individuals with type 2 diabetes. Supplementing with vitamin D has been shown to improve glucose tolerance, insulin secretion, and insulin sensitivity in those with DM.[24,25] A deficiency of vitamin D may be more frequent in women with PCOS; and in a small study, 5 of 13 women had an overt vitamin D deficiency. Seven of the 9 women with no menses or infrequent menses had a return to a normal menstrual cycle within 2 months of being given 50,000 IU once or twice per week of vitamin D and 1500 mg per day of calcium.[10]

Chromium is a trace mineral that enhances the action of insulin. Supplementing with chromium has been shown in some studies to improve the blood sugar control in those with type 2 DM.[26] Giving PCOS women 1000 mcg per day of chromium for as little as 2 months was able to improve insulin sensitivity by 30% and by 38% in obese women with PCOS.[27,28]

Over the last 10 years, myoinositol has been used more frequently as an insulin-sensitizing agent. It is suggested that the insulin resistance which we see in PCO is due to a deficiency of myoinositol's intracellular metabolites, D-*chiro*-inositol (DCI) and inositol-phosphoglycan, both mediators of insulin actions. Another theory is that women with PCOS have a higher urinary clearance of DCI. At least two studies have demonstrated that treating women with myoinositol or DCI reduces androgen levels, augments the restoration of ovulatory function, lowers blood pressure, and decreases triglycerides.[29,30] Pinitol, a compound similar to D-*chiro*-inositol, is also available. Pinitol appears to mediate insulin activity.[31] In an important study about this nutrient, 600 mg of pinitol twice per day for three months lowered blood glucose levels by 19%, lowered average glucose levels by 12%, and significantly improved insulin resistance.[32]

A very recent study utilized black cohosh, 20 mg/day for 10 days/month compared with clomiphene citrate for 5 days/month.[33] Both groups received the medication from the second day of the cycle for three consecutive months. Following treatment, significant positive changes were seen with black cohosh in reducing luteinizing hormone (LH) levels, progesterone levels, and better ovulation. A reduction in LH has a potent effect on androgen excess in women with PCOS, allowing for more regular ovulation.

One of the most compelling natural health supplements in treating PCOS is N-acetylcysteine (NAC). In a 2002 study, 6 lean and 31 obese women with PCOS were treated with NAC at a dose of 600 mg three times daily for 5 to 6 weeks.[34] While fasting glucose, fasting insulin, and glucose area under the curve were unchanged, insulin area under the curve after oral glucose tolerance testing was significantly reduced, and the peripheral insulin sensitivity increased after NAC intervention. NAC also resulted in a significant drop in testosterone levels and in free androgen index values. Perhaps even more

➤

patients slowly but steadily improved, reducing symptoms from severe to moderate. Overall, this group experienced a 33% reduction in endometriosis symptoms. The leuprorelin group had a greater response within the treatment period, but relapsed after 24 weeks posttreatment. The pine bark group maintained regular menses and normal estrogen levels during treatment; and, as expected, the leuprorelin group had suppressed menstruation and drastically lowered estrogen levels during treatment. In addition, 5 women in the trial taking pine bark became pregnant.

Kohama T, Herai K, Inoue M. Effect of French maritime pine bark extract on endometriosis as compared with leuprorelin acetate. *J Reprod Med*. 2007;52(8):703–708.

N-Acetylcysteine

In this observational study, patients were given either N-acetylcysteine (NAC) 600 mg 3 times daily, 3 consecutive days per week, or no treatment for a period of 3 months, to compare the progression of ovarian endometriomas. At the end of the observation period, endometriomas were evaluated using pelvic ultrasound, by a trained physician who was blinded as to which group the patients had been in.

A total of 92 Italian women, 47 in the NAC-treated group and 45 in the untreated group, were ultimately included. Women were enrolled to select inclusion criteria: (1) an ultrasound diagnosis of ovarian endometrioma; (2) no hormonal treatment in the previous 2 months; (3) laparoscopic surgery scheduled due to the presence of either a large endometrioma 30 mm or greater, pain, or infertility.

In the NAC-treated group, 24 patients cancelled their scheduled laparoscopy due to a decrease or disappearance of cysts, pain reduction, or pregnancy. Again, in the NAC-treated group, 14 women had decreased ovarian cysts (−1.5 mm average), 8 had a complete disappearance, 21 had pain reduction, and 1 became pregnant. In the control group, only 1 patient cancelled surgery. There were 4 endometriomas that disappeared. Overall, more cysts reduced and fewer cysts increased in size in the NAC group. There were 4 newly formed cysts in the NAC group vs. 4 in the untreated group. After the observation period, a total of 8 pregnancies occurred in the NAC-treated group and 6 in the untreated group.

Porpora M, Brunelli R, Costa G, et al. A promise in the treatment of endometriosis: an observational cohort study on ovarian endometrioma reduction by N-acetylcysteine. *Evid Based Complement Alternat Med*. 2013; April. Article ID 240702. http://dx.doi.org/10.1155/2013/240702.

◆

Uterine Fibroids: Overview and *Crinum Latifolium* – A Plant that You May Not Have Heard of

by Tori Hudson, ND

Uterine fibroids are not actually fibrous but consist of muscle, probably both smooth muscle cells and connective tissue. The growth of fibroids is thought to be stimulated by estrogen. The tendency of fibroids to arise during the reproductive years, grow during pregnancy, and regress postmenopausally implicates estrogen as one factor in their cause and growth. Fibroids often demonstrate a growth spurt in the perimenopausal years, likely because of anovulatory cycles with a relative estrogen excess that commonly occurs irregularly during this time.

Uterine fibroids occur in 20% to 25% of women by age 40 and in more than 50% of women overall, with African American women experiencing a higher incidence. Fibroids are the most common indication for major surgery in women and the most common solid tumor in women.

The cause of uterine fibroids remains poorly understood. Increases in local estradiol concentration within the fibroid itself may play a role in its cause and growth. Concentrations of estrogen receptors in fibroid tissue are higher than in the surrounding myometrium but lower than in the endometrium.

Fifty percent to 80% of fibroids do not cause symptoms. Abnormal bleeding, including menorrhagia and metrorrhagia, occurs in 30% of women with fibroids. Other symptoms are pelvic pressure, bloating, congestion, urinary frequency, backache, and pain with vaginal sexual activity. Sometimes the urinary complications may be a cause for concern because they may be due to compression of the ureter, which can then cause hydronephrosis. Fibroids are thought to be the cause of 2% to 10% of cases of infertility. Large fibroids can also interfere with a normal pregnancy by interfering with fetal growth or causing premature rupture of membranes, retained placenta, postpartum hemorrhage, abnormal labor, or an abnormal fetal lie. The incidence of miscarriage due to fibroids is estimated to be 2 to 3 times greater than that in women without fibroids.

Fibroids can undergo degenerative changes. One type of degenerative change occurs when the continued growth of the fibroid outpaces the blood supply. A more common type of degenerative change involves a loss of cellular detail as a result of a decrease in the tumor's vascularity. Necrosis leads to cystic degeneration. Calcification can occur over time and is usually seen in postmenopausal women.

Unfortunately, there is no nice body of published research on the natural-medicine treatment of fibroids. In fact, it is downright bleak. Until the very recently published studies on green tea extract and the Vietnamese herb *Crinum latifolium* (see below), no specific food or dietary regimen, no herbal or nutrient protocol, no hands-on treatments could give us any real reassurance about our ability to bring about success in actually shrinking uterine fibroids, or even offering data on symptom management. Natural-medicine resource books, old and new, and occasional case reports are full of creative ideas, theoretical propositions, and anecdotal reports; but as of yet, this remains an area in which symptom management, "wait and watch," or conventional treatment options must be considered. What natural medicine can often accomplish, as can conventional medicine, is to decrease and control bleeding, increase pelvic/abdominal comfort, and buy time until menopause, when most, but not all, uterine fibroids tend to reduce in size. Traditional and historical naturopathic approaches to uterine fibroids have included castor oil packs over the liver, low-fat/low-saturated-fat/high-fiber diets, alterative herbs (*Corydalis* tubers, black alder bark, mayapple root, figwort flowering herb, yellow dock root); Turska's formula (gelsemium root, pokeroot, aconite, and bryonia – consult a botanical expert, as these are toxic herbs); and thuja, red root, mountain ash bark, prickly ash bark, *Stillingia* root, *Helonias* root, mayapple root, and ginger root. Some plants are specific to decreasing acute bleeding from fibroids and include liferoot, yarrow, periwinkle, ginger, and shepherd's purse. Select nutrients are also based on theoretical thinking rather than scientific research and include supplements such as inositol and choline that exert a "lipotropic" effect, meaning that they promote the removal of fat from the liver. Lipotropic supplements are usually designed to support the liver's function in removing fat, detoxifying the body's wastes, detoxifying external harmful substances (pesticides, fossil fuels, etc.), and metabolizing and excreting estrogens.

The important clinical guides to when conventional intervention should be considered ranges from purely cosmetic (enlarged protruding pelvic/abdominal area) to discomfort (bloating, constipation, flatulence, pain with deep intercourse, urinary incontinence) to excess blood loss causing serious and poorly manageable anemia (even dangerous amounts of blood loss can occur), to kidney enlargement and dysfunction due to obstruction of the ureters. Several surgical options exist these days, from uterine sparing to different techniques of performing a hysterectomy, some friendlier with shorter recovery times than others. Some fibroids also lend themselves to uterine embolization or hysteroscopic resection of the fibroids. These options can be discussed with a gynecologist who has broad experience with all of these methods and can remain open to all considerations and options.

Two Herbs with Hope for Symptom Management and Tumor Shrinkage

Crinum Latifolium

Crinum latifolium has been a part of Vietnamese history and folklore for generations. Numerous benefits of *C. latifolium* have been reported over the years but none had been clinically studied until recently. Of the 12 varieties of *C. latifolium*, one specific variety, "Crila" (*C. latifolium* L. var. *crila*e Tram & Khanh, named after the leading researcher), has been studied in women with uterine fibroids. A 3-month study of 195 women with uterine fibroid tumors was conducted in three hospitals in Vietnam in 2007. The *C. latifolium* decreased the size or stopped the growth of the fibroid tumors in 79.5% of the women. In 20.5%, tumor growth

striking is a recent study that compared NAC with metformin, a first-line pharmacological intervention for PCOS.[35] A total of 100 women were randomized to receive either metformin 500 mg three times daily or NAC 600 mg three times daily for 24 weeks. Following treatment, LH, total testosterone, free testosterone, and hirsutism decreased significantly and SHBG increased significantly in both groups. Menstrual regularity was restored in 2 more patients in the NAC group than in the metformin group. In the metformin group, total serum cholesterol levels were significantly lowered, but no significant changes were observed in LDL, triglycerides, and HDL. In the NAC group, total cholesterol and LDL decreased significantly, but no changes were observed in triglycerides and HDL. The changes in lipid profiles between the two groups were not significant. Both metformin and NAC had positive effects on reducing fasting insulin levels, without change in fasting glucose, but this means that glucose-insulin rations were increased significantly following treatment with both medicines.

Conventional treatment of PCOS recommends diet and exercise and frequently the prescription drug metformin, used to improve insulin resistance. Other medications are used to induce ovulation, such as clomiphene citrate, spironolactone to decrease testosterone on the hair follicle, and oral

continued at a very slow rate. Whereas a heavy menstrual flow was reported by 36% of the women before taking Crila, this had decreased to only 1% after treatment. Side effects reported were slight, including nausea, headache, vaginal dryness, and hot flashes, but these decreased over time.

Tram NTN. To evaluate the effect and possibility of accepting of CRILA in uterus fibroid tumor treatment. Vietnam National Institute of Gerontology Hospital. 2007. http://www.crilahealth.com/wp-content/uploads/2011/03/Uterus-Fibroid-Tumor-research-10-09.pdf.

Green Tea Extract

This double-blinded, placebo-controlled, randomized clinical trial evaluated the efficacy and safety of green tea extract on uterine fibroid burden and quality of life in reproductive-aged women with symptomatic uterine fibroids.

A total of 39 women aged 18 to 50 years old with symptomatic uterine fibroids were recruited. Eligible women included those with a follicle-stimulating hormone (FSH) less than 10 mIU/L, at least moderately severe uterine fibroid related symptoms with a score of ≥25 on the Uterine Fibroid Symptom and Health-Related Quality of Life Questionnaire subscale (UFS-QOL). All the women had at least one fibroid measuring 2 cm or larger based on transvaginal and/or transabdominal ultrasound and a total uterine volume of ≥160 mL by vaginal and abdominal ultrasound.

Twenty-two were randomized to receive green tea extract and 17 to receive placebo.

Study subjects were randomized to oral green tea extract (EGCG) or placebo of brown rice daily for 4 months. Each green tea capsule contained 95% polyphenols and 45% EGCG. Women received 2 capsules daily of either green tea or placebo.

Uterine fibroid volumes were measured at beginning and end of the study. The fibroid-specific symptom severity and quality of life questionnaires were scored at each monthly visit.

The mean change in both the volume and number of uterine fibroids was assessed by transvaginal ultrasound (TVU) and/or transabdominal ultrasound at baseline and at the end of the 4-month treatment period.

The secondary measure at each visit was the mean change in the UFS-QOL and the health-related quality of life (HRQL) questionnaire. Blood loss was also assessed monthly with a menstrual log and visual assessment of quantity.

Of the 39 women, 33 were compliant and completed the 5-visit study over the 4-month period. Of the final 11 women who completed the placebo group, fibroid volume increased by 24.3% over the study period. Of the final 22 women in the green tea extract group, a significant uterine fibroid total volume reduction of 32.6% was observed. The green tea extract group also had a significant reduction in fibroid specific symptom severity of 32.4% and a significant improvement in HRQL of 18.53% compared with the placebo group. Anemia improved significantly by 0.7 g/dL in the green tea group, and the average blood loss significantly decreased from 71 mL/month to 45 mL/month. There were no adverse effects or endometrial hyperplasia or pathology in either group.

Comment: Green tea, especially its EGCG constituent, has anti-inflammatory, antiproliferative, and antioxidant effects. The study's authors attributed the reduction in fibroid size from EGCG due to an inhibitory effect on leiomyoma tumor cell proliferation and apotosis induction.

More than half of US women ages 35 to 49 are affected by uterine fibroids. These benign growths can cause acute and chronic pelvic pain, excessive uterine bleeding, dyspareunia, iron deficiency anemia, miscarriage, infertility, constipation and/or irregular bowel habits, and urinary incontinence. The impact of these complications on a woman's health can be significant, and currently there is no effective long-term medical treatment for these fibroids. Short-term conventional management options include gonadotropin-releasing hormone analogues but are only approved for short-term preoperative adjuvant use due to their risk of significant and irreversible bone loss, osteoporosis, and other major side effects. Progestogen or hormonal contraceptive management is sometimes helpful to control bleeding. If symptoms affect quality of life significantly, or fibroid removal could improve miscarriage and/or fertility, or there is medical urgency due to bleeding, then management options range include hysteroscopic resection of submucosal fibroids, hysterectomy, myomectomy, uterine artery embolization, or image-guided focused ultrasound thermal therapy. Milder cases usually involve just observation, especially in asymptomatic fibroids, or the patient's putting up with her symptoms.

This study, of a simple and safe botanical option such as green tea extract, is a welcomed noninvasive intervention for treatment and/or prevention of uterine fibroids and could be a game changer for many women.

Roshdy E, Rajaratnam V, Maitra S, et al. Treatment of symptomatic uterine fibroids with green tea extract: a pilot randomized controlled clinical study. *Int J Womens Health*. 2013;5:477–486.

contraceptives to address irregular menstrual cycles and excess body hair. Topical treatments are often recommended to address hirsutism and acne.

PCOS is a complicated condition, requiring long-term attention and regular medical attention, keeping in mind the potential for increased risks of diabetes, hypertension, hyperlipidemia, and uterine cancer.

As holistic/natural-medicine practitioners, gaining more awareness, knowledge, and experience with PCOS will help us to play a vital role in detecting the long-undiagnosed patient, the inadequately managed patient, and the discouraged patient.

Resources

Dr. Tori Hudson, N.D. [blog]. www.drtorihudson.com.

Dunne N, Slater B. *The Natural Diet Solution for PCOS and Infertility*. Health Solutions Press; 2005.

Harris C, Carey A. *PCOS: A Woman's Guide to Dealing with Polycystic Ovary Syndrome*. Thorsons; 2000.

Hudson T. *Women's Encyclopedia of Natural Medicine*. McGraw-Hill; 2007.

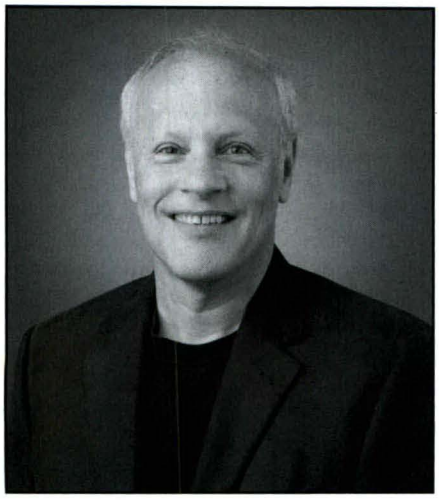
Thatcher SS. *PCOS: Polycystic Ovary Syndrome: The Hidden Epidemic*. Perspectives Press; 2000.

Notes

1. Azziz R, Carmina E, Dewailly D, et al. Positions statement: criteria for defining polycystic ovary syndrome as a predominantly hyperandrogenic syndrome: an Androgen Excess Society guideline. *J Clin Endocrinol Metab*. 2006;91:4237–4245.
2. Legro R, Castracane V, Kauffman R. Detecting insulin resistance in polycystic ovary syndrome: purposes and pitfalls. *Obstet Gynecol Surv*. 2004;59:141–154.
3. Moran L, Pasquali R, Teede H, et al. Treatment o fobesity in polycystic ovary syndrome: a position statement of the Androgen Excess and Polycystic Ovary Syndrome Society. *Fertil Steril*. 2009;92:1966–1982.
4. Galletlly C, Clark A, Tomlinson L, Blaney F. A group program for obese, infertile women: weight loss and improved psychological health. *J Psychosom Obstet Gynaecol*. 1996;17:125–128.
5. Moran L, Noakes M, Clifton P, et al. Dietary composition in restoring reproductive and metabolic physiology in overweight women with polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2003;88:812–819.
6. Stamets K, Taylor D, Kunselman A, et al. A randomized trial of the effects of two types of short-term hypocaloric diets on weight loss in women with polycystic ovary syndrome. *Fertil Steril*. 2004;81:630–637.
7. Moran L, Noakes M, Clifton P, et al. Short-term meal replacements followed by dietary macronutrient restriction enhance weight loss in polycystic ovary syndrome. *Am J Clin Nutr*. 2006;84:77–87.
8. Hoeger K, Davidson K, Kochman L, Cherry T, Kopin L, Guzick DS. The impact of metformin, oral contraceptives, and lifestyle modification on polycystic ovary syndrome in obese adolescent women in two randomized, placebo-controlled clinical trials. *J Clin Endocrinol Metab*. 2008;93:4299–4306.
9. Kasim-Karakas S, Almario R, Cunningham W. Effects of protein versus simple sugar intake on weight loss in polycystic ovary syndrome. *Fertil Steril*. 2009;92:262–270.
10. Moran LJ, Noakes M, Clifton PM, Tomlinson L, Galletly C, Norman RJ. Dietary composition in restoring reproductive and metabolic physiology in overweight women with polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2003;88:812–819.
11. Schottner M, Gansser D, Spiteller G. Lignans from the roots of Urtica dioica and their metabolites bind to human sex hormone binding globulin. *Planta Med*. 1997;63(6):529–532
12. Gansser D, Spiteller G. Plant constituents interfering with human sex hormone-binding globulin. Evaluation of a test method and its application to Urtica dioica root extracts. *Z Naturforsch*. 1995;50(1–2):98–104.
13. Schottner M, GanBer D, Spiteller G. Lignans from the roots of Urtica dioica and their metabolites bind to human sex hormone binding globulin (SHBG). *Planta Med*. 1997; 63:529–532.
14. Gansser D, Spiteller G. Aromatase inhibitors from Urtica dioica roots. *Planta Med*. 1995;61(2):138–140.
15. Nagata C, Kabuto M, Shimizu H. Association of coffee, green tea, and caffeine intakes with serum concentrations of estradiol and sex hormone-binding globulin in premenopausal Japanese Women. *Nutr Cancer*. 1998;30(1):21–24.
16. Kumar N, Cantor A, Allen K, et al. The specific role of isoflavones on estrogen metabolism in premenopausal women. *Cancer*. 2002;94:1166–1174.
17. Goldin B, Adlercreutz H, Gorbach S, et al. The relationship between estrogen levels and diets of Caucasian American and Oriental immigrant women. *Am J Clin Nutr*. 1986;44:945–953.
18. Xu X, Duncan A, Wangen K, Kurzer M. Soy consumption alters endogenous estrogen metabolism in postmenopausal women. *Cancer Epidemiol Biomarkers Prev*. 2000;9:781–786.
19. Martini M, Dancisak B, Haggans C, Thomas W, Slavin J. *Nutr Cancer*. 1999;34(2):133–139.
20. Prager N, Bicket K, French N, Marovici G. A randomized, double-blind, placebo-controlled trial to determine the effectiveness of botanically derived inhibitors of 5-alpha-reductase in the treatment of androgenetic alopecia. *J Altern Complement Med*. 2002;8(2):143–152.
21. Armanini D, Mattarello M, Fiore C, et al. Licorice reduces serum testosterone in healthy women. *Steroids*. 2004;69:763–766.
22. *Acta Obst Gynecol Jpn*. 1982;34:939–944.
23. Thys-Jacobs S, Donovan D, Papadopoulos A, et al. Vitamin D and calcium dysregulation in the polycystic ovarian syndrome. *Steroids*. 1999;64:430–435.
24. Raghuramulu N, Raghunath M, Chandra S, et al. Vitamin D improves oral glucose tolerance and insulin secretion in human diabetes. *J Clin Biochem Butr*. 1992;13:45–51.
25. Borissova A, Tankova T, Kirilov G, et al. The effect of vitamin D3 on insulin secretion and peripheral insulin sensitivity in type 2 diabetic patients. *Int J Clin Pract*. 2003;57:258–261.
26. Gaby A. Chromium. *Integrative Med*. 2006;5(4):22–26.
27. Lydic L, McNurlan M, Komaroff E, et al. Effects of chromium supplementation on insulin sensitivity and reproductive function in polycystic ovarian syndrome: a pilot study. *Fertil Steril*. 2003;80(Suppl 3):S45–S46.
28. Lydic M, McNurlan M, Bembo S, Mitchell L, Komaroff E, Gelato M. Chromium picolinate improves insulin sensitivity in obese subjects with polycystic ovary syndrome. *Fertil Steril*. 2006;86:243–246.
29. Gerli S, Mignosa M, Di Renzo G. Effects of inositol on ovarian function and metabolic factors in women with PCOS: a randomized double blind placebo-controlled trial. *Eur Rev Med Pharmacol Sci*. 2003;7(6):151–159.
30. Ciotta L, Stracquadanio M, Pagano I, et al. Effects of myo-inositol supplementation on oocyte's quality in PCOS patients: a double blind trial. *Eur Rev Med Pharmacol Sci*. 2011;15(5):509–514.
31. Davis A, Christiansen M, Horowitz J, et al. Effect of pinitol treatment on insulin action in subjects with insulin resistance. *Diabetes Care*. 2000;23:1000–1005.
32. Kim J, Kim J, Kang M, et al. Effects of pinitol isolated from soybeans on glycaemic control and cardiovascular risk factors in Korean patients with type II diabetes mellitus: a randomized contolled study. *Eur J Clin Nutr*. 2005;59:456–458.
33. Kamel H. Role of phyto-estrogens in ovulation induction in women with polycystic ovarian syndrome. *Eur J Obstetr Gynecol Reprod Biol*. 2013;168(1):60–63.
34. Fulghesu A, Ciampelli M, Muzj G, et al. N-acetyl-cysteine treatment improves insulin sensitivity in women with polycystic ovary syndrome. *Fertil Steril*. 2002;77(6):1128–1135.
35. Oner G, Muderris I. Clinical, endocrine and metabolic effects of metformin vs N-acteyl-cytseine in women with polycystic ovary syndrome. *Eur J Obstetr Gynecol Reprod Biol*. 2011;159:127–131.

Dr. Tori Hudson graduated from the National College of Naturopathic Medicine (NCNM) in 1984 and has served the college in many capacities over the last 28 years. She is currently a clinical professor at NCNM and Bastyr University; has been in practice for over 28 years; and is the medical director of the clinic A Woman's Time in Portland, Oregon, and director of research and development for Vitanica, a supplement company for women. She is also a nationally recognized author, speaker, educator, researcher, and clinician.

◆



Vitamin and Mineral Supplements Are Not a Waste of Money: Comments on a Widely Publicized Editorial

On December 17, 2013, there was widespread coverage in the news media of an editorial that appeared in the *Annals of Internal Medicine* (*Annals*), under the title: "Enough is Enough: Stop Wasting Money on Vitamin and Mineral Supplements."[1] The authors of the editorial concluded, "We believe that the case is closed – supplementing the diet of well-nourished adults with (most) mineral or vitamin supplements has no clear benefit and might even be harmful. These vitamins should not be used for chronic disease prevention. Enough is enough." However, the editorial appears to be biased and to lack scholarship, as it is based on selective reporting and a superficial analysis of the vast and complex body of research on the health effects of nutritional supplements.

The editorial focused mainly on three studies published in that issue of the *Annals*. The first study found that supplementing with large doses of vitamins and minerals after a heart attack reduced the recurrence rate of cardiovascular events (such as heart attack, stroke, or heart surgery) by 11%, compared with a placebo.[2] However, because this reduction was not statistically significant, the editorial concluded (incorrectly) that the treatment was ineffective. The failure to demonstrate that an effect is statistically significant is not the same as demonstrating the absence of an effect. The correct conclusion is that the nutritional supplement reduced the number of cardiovascular events by 11%, but because this reduction was not statistically significant, we are less than 95% certain that the effect was real (as opposed to being due to chance).

The second study in the *Annals* found that daily use of a low-potency multivitamin (Centrum Silver) for an average of 8.5 years had no effect on cognitive function in elderly men participating in the large Physicians' Health Study II.[3] However, two other recent double-blind trials (which were not mentioned in the editorial) found positive effects of vitamins. In one of those studies, daily supplementation with 400 mcg of folic acid and 100 mcg of vitamin B12 significantly improved cognitive function in elderly men.[4] The other study showed that daily supplementation with 800 mcg of folic acid, 500 mcg of vitamin B12, and 20 mg of vitamin B6 slowed the rate of brain atrophy in elderly individuals suffering from mild cognitive impairment.[5] There are two potentially important differences between these positive studies and the negative study cited in the editorial. One difference is that the amount of vitamin B12 in Centrum Silver (25 mcg) is much lower than the amount used in the positive studies (100 and 500 mcg, respectively). Loss of cognitive function is a well-known effect of vitamin B12 deficiency. Although all of the study supplements provided more than the Recommended Dietary Allowance for vitamin B12 (2.4 mcg per day), recent research has shown that many elderly people need unusually large amounts of this vitamin (500 mcg per day or more in some cases) to achieve optimal vitamin B12 nutritional status.[6] The other difference is that several aluminum-containing artificial coloring agents are present in Centrum Silver (FD&C Blue 2 Aluminum Lake, FD&C Red 40 Aluminum Lake, and FD&C Yellow 6 Aluminum Lake), and these chemicals have the potential to adversely affect cognitive function. Artificial coloring agents are known to have negative effects on the behavior of children, although these chemicals have not been well studied in adults.[7] Moreover, there is evidence that long-term aluminum exposure can contribute to the development of Alzheimer's disease.[8] The ineffectiveness of a low-potency supplement that contains extraneous and potentially harmful additives does not negate the beneficial effects of higher-potency supplements reported in other trials.

The third *Annals* study discussed in the editorial was a review of research examining whether vitamin and mineral supplements can prevent heart disease or cancer.[9] The editorial stated that there is "no clear evidence" that taking a multivitamin can prevent cancer. However, the research review that was cited in the editorial actually found a statistically significant 7% reduction in cancer incidence in men, and no effect in women. While further research is needed to understand why the results differed between men and women, the findings certainly do not warrant the conclusion that the case is closed and to stop wasting money on supplements. With respect to heart disease prevention, the research review focused on two large studies that failed to find a beneficial effect. In one of those studies, Centrum Silver was given to men participating in the Physicians' Health Study II (mentioned above). In the other study, five nutrients were given (zinc, vitamin C, vitamin E, selenium, and beta-carotene). In both of these studies, zinc was not properly balanced with copper. Copper deficiency causes cardiovascular disease in experimental animals, and supplementing with large doses of zinc has been shown to induce copper deficiency in humans. It is possible that taking a moderate amount of zinc (15 to 20 mg per day, as

➤

used in these studies) for many years would also decrease copper status. Considering that the average copper content of various foods has declined substantially since around 1940, a further decrease in copper status from long-term zinc supplementation could adversely affect the cardiovascular system.[10] The study that included five nutrients gave 20 mg of zinc per day with no copper for 7.5 years. Centrum Silver does contain copper, but for approximately 70% of the 11-year study, the form of copper in the product was cupric oxide, which cannot be absorbed by humans.[11,12]

Multivitamin-mineral preparations have been shown in published research to have a wide range of benefits, including increasing energy and stress tolerance, improving pregnancy outcomes, decreasing infection rates, slowing bone loss, and improving cognitive function in schoolchildren. Some studies have also demonstrated protection against cardiovascular disease and cancer, although the evidence is conflicting. Furthermore, various individual nutrients or combinations of nutrients have been used successfully for the prevention and treatment of many other health conditions, including migraines, congestive heart failure, rheumatoid arthritis, kidney stones, diabetes, and depression.[13]

Future research should attempt to understand the differences between studies that found positive results and those that did not, in order to maximize the benefits and minimize the risks of nutritional supplements. Simply dismissing a vast body of research because the results are conflicting is not useful. The case regarding vitamins and minerals is far from closed, and the public is not well served by shallow interpretations of complex issues.

Alan R. Gaby, MD

Notes

1. Guallar E et al. Enough is enough: stop wasting money on vitamin and mineral supplements. *Ann Intern Med*. 2013;159:850–851.
2. Lamas GA et al. Oral high-dose multivitamins and minerals after myocardial infarction: a randomized trial. *Ann Intern Med*. 2013;159:797–804.
3. Grodstein F et al. Long-term multivitamin supplementation and cognitive function in men: a randomized trial. *Ann Intern Med*. 2013;159:806–814.
4. Walker JG et al. Oral folic acid and vitamin B-12 supplementation to prevent cognitive decline in community-dwelling older adults with depressive symptoms – the Beyond Ageing Project: a randomized controlled trial. *Am J Clin Nutr*. 2012;95:194–203.
5. Smith AD et al. Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: a randomized controlled trial. *PLoS One*. 2010;5(9):e12244.
6. Hill MH et al. A vitamin B-12 supplement of 500 mcg/d for eight weeks does not normalize urinary methylmalonic acid or other biomarkers of vitamin B-12 status in elderly people with moderately poor vitamin B-12 status. *J Nutr*. 2013;143:142–147.
7. McCann D et al. Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial. *Lancet*. 2007;370:1560–1567.
8. Gaby AR. Alzheimer's disease. In: *Nutritional Medicine*. Concord, N.H.: Fritz Perlberg; 2011. www.doctorgaby.com.
9. Fortmann SP et al. Vitamin and mineral supplements in the primary prevention of cardiovascular disease and cancer: an update systematic evidence review for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2013;159:824–834.
10. Worthington V. Nutritional quality of organic versus conventional fruits, vegetables, and grains. *J Altern Complement Med*. 2001;7:161–173.
11. Pfizer Consumer Healthcare. Personal communication. December 7, 2012.
12. Baker DH. Cupric oxide should not be used as a copper supplement for either animals or humans. *J Nutr*. 1999;129:2278–2279.
13. Gaby AR. *Nutritional Medicine*. Concord, N.H.: Fritz Perlberg; 2011. www.doctorgaby.com.

pure encapsulations®

— Your Trusted Source —

With over 35 products devoted to ***Women's Health,*** Pure Encapsulations offers a comprehensive line for creating individualized patient protocols.*

Including support for:

- Daily Wellness*
- Premenstrual and Menopausal Support*
- Breast and Cervical Health*
- Osteoporosis Support*
- Urinary and Bladder Support*
- Emotional and Stress Support*

YouTube

NSF GMP Registered

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

800-753-2277 | PureEncapsulations.com

The information contained herein is for informational purposes only and does not establish a doctor-patient relationship. Please be sure to consult your physician before taking this or any other product. Consult your physician for any health problems.

TRUST. IN NUTRITIONAL HEALTH.

HORMONE HEALTH SUITE

Douglas Laboratories created the Hormone Health Suite to support the optimal function of specific hormones through the use of hormone specific adaptogens, agonists and functional mimetics. The extensive line has been designed to balance men's and women's hormonal health, including thyroid and adrenal support. These formulations may be used by clinicians as adjuvants to support optimal hormone health in patients who have been prescribed bioidentical hormone therapies.†

Multiple formulas offered to meet the exact needs of your patients.
Request a copy of our Hormone Suite Brochure.
1.800.245.4440 | douglaslabs.com

†These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

DOUGLAS LABORATORIES®

You Trust Douglas Laboratories®. Your Patients Trust You.