



Wise Traditions



IN FOOD, FARMING AND THE HEALING ARTS

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CONTENTS

FEATURES

Cholesterol Sulfate Deficiency Page 16
Dr. Stephanie Seneff on the role of cholesterol sulfate and heart health

Vitamin D Dilemmas Page 29
Pam Schoenfeld looks into whether we should test for and prescribe vitamin D

The Five “Obstacles to Cure” Page 39
Louisa Williams explains how to address five common challenges to optimal health

The Adrenal-Heart Connection Page 49
Dr. Tom Cowan discusses the reasons why we need a different way of thinking about the heart

The Accidentally Healthy Diet Page 61
Jane Hersey describes the Feingold Diet as a gateway to Wise Traditions principles

DEPARTMENTS

President’s Message Page 2
Heartless Medicine

Letters Page 3

Caustic Commentary Page 9
Sally Fallon Morell challenges the Diet Dictocrats

Wise Traditions 2017 Page 12
Conference speakers and schedule

Reading Between the Lines Page 64
Merinda Teller talks about c-sections and evolution

Homeopathy Journal Page 69
Joette Calabrese on homeopathic adrenal support

Technology as Servant Page 72
John Moody shares his insights on the hazards of gluten-free foods

WAPF Podcast Interview Page 75
Hilda Gore interviews Gerald Pollack on the fourth phase of water

All Thumbs Book Reviews Page 81
The Case against Sugar
The Alzheimer's Antidote
The Hungry Brain
Mastering Stocks and Broths
Eat Fat, Get Thin
Just Breathe Out
Drowning in 8 Glasses
Pregnancy and Fluoride Do Not Mix

Food Features Page 90
Elaine Michaels discovers that kombucha can be tasty

Legislative Updates Page 93
Judith McGeary warns about animal ID raising its ugly head

A Campaign for Real Milk Page 97
Sylvia Onusic on popular raw milk vending machines

Healthy Baby Gallery Page 103
Local Chapters Page 104
Shop Heard ‘Round the World Page 117
Membership Page 136
Upcoming Events Page 137

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President's Message

Heartless medicine—that's how I would describe today's ruling medical paradigm. Today's doctor bases his treatment on a few false assumptions—that the heart is a pump, that nourishing nutrient-dense foods clog our arteries and that cholesterol is the enemy. The result is a “health care” system that treats heart disease with toxic drugs, soulless diets and macabre surgery—such as opening up the chest with a circular saw to perform heart bypass surgery, the bread-and-butter operation of most hospitals. (Likewise, doctors impose poisonous chemotherapy which makes cancer patients miserable and harsh protocols for pregnant women and growing children—from ultrasound to multiple vaccinations.)

This issue focuses on nurturing rather than ruinous therapies for heart disease, starting with Stephanie Seneff's fascinating description of the role played by cholesterol sulfate in maintaining the health of our veins and capillaries. Eating a sulfur-rich diet and spending time in the sun ensures that our bodies produce plentiful amounts of this healing substance—which beats lying in a hospital bed after surgery any day.

Pam Schoenfeld looks at the dark side of vitamin D supplementation—calcification of the soft tissues, including the arteries—while Tom Cowan expands on his favorite theme—that the heart is not a pump.

All three of these talented writers will be speakers at Wise Traditions 2017, our eighteenth annual conference, to be held in Minneapolis, along with many other perennial favorite speakers and knowledgeable new faces. The theme this year: hormone health. . . and more. And as always, we provide a mix of speakers who range from advanced and technical to basic and practical. One thing we promise: you will come away with good solid information, not a lot of hype and product promotion. Information and registration is at wisetraditions.org.

We are also striving to provide ways to make the conference affordable—although our conference fees are already very reasonable, considering that we provide five nutrient-dense meals over the three days of the event. For newcomers, we are offering a one-day pass for my Nourishing Traditional Diets seminar plus lunch for sixty dollars—space for this is limited, so if you are interested don't delay in signing up. We have a number of full scholarships and work scholarships available, and also can help you organize ride share and room share. The exhibit hall is free on Saturday and Sunday, as is the Friday evening film.

For Monday activities, we have streamlined to just three offerings: our ever-popular guided farm visit with Will Winter; an all-day seminar with Chris Masterjohn; and for the first time ever, a master cooking class that I will give. In the class we will prepare three full meals, with attention on sauce-making and what to do with leftovers.

As always, we look forward to seeing you there! 

Letters

A JOURNAL FOR NEWBIES

I have just finished reading the Spring 2017 journal—what an absolutely *wonderful* journal for the newbies! I think it should be given to all first-time members. I would like to order a truckload of them! And what a great boost after a membership drive! Way to go!

Mary Walkes
Avon, South Dakota

A TRUE BLUE ZONE

I want to thank Gina Baker for her article “Costa Rica—Land of the Centenarians” (Spring 2017). She set the record straight on what the people in the “Blue Zone” of Costa Rica (Nicoya Peninsula) really eat! She lists these foods as pork, liver, kidney, lard, etc.

As it happens, I had purchased the *National Geographic* special publication “Blue Zones, the Science of Living Longer” that Baker refers to in her article. The author clearly pushes the vegetarian view in the *National Geographic* article. But if you read carefully, the author actually mentions that they cooked with a “dollop of lard” on the grill and “fried up some eggs” for lunch and garnished with “fresh cheese” (which I bet was not pasteurized). Even worse, at the end of the *National Geographic* article, the author lists the “top longevity foods” and purposefully leaves out lard, eggs and cheese, and only mentions squash, papayas and bananas. If you didn’t know any better (as is the case for the general public), you would have once again gotten the message

that only plant foods promote health and longevity, while animal products should be avoided. I wonder whether the *National Geographic* author made that omission on purpose, or was it due to the current general brainwashing?

Jackie Hunt
Lake Jackson, Texas

INSULIN AND WEIGHT LOSS

Tom Cowan’s article “Understanding Weight Gain and Weight Loss” (Spring 2017) repeats—and promotes—a common error when he



states the following: “Basically, people gain weight because of insulin. . . Weight gain is not about the calories.”

While it is true that, as he says, “without insulin it is impossible to gain weight and become fat,” Tom fails to point out the additional critically important fact that in the absence of a hypercaloric intake, it is equally impossible to gain weight, regardless of one’s insulin levels.

Although insulin is a necessary condition, it is not—as Tom would apparently have us believe—a sufficient condition for weight gain to occur. A sufficient condition for the occurrence of an event is a circumstance in whose presence the event must occur. Just as with energy intake per se, insulin per se is a necessary but insufficient condition for weight gain to occur.

This matter of “insulin versus calories” was addressed—correctly—by Chris Masterjohn back in May 2016: “...the idea that carbohydrate uniquely contributes to obesity because insulin promotes storage of fat in adipose tissue is also misleading because although that’s true, insulin also stimulates the burning of carbohydrate for energy. So if you have more carbohydrate coming in in the diet and less fat coming in in the diet, then insulin is helping shift the fat towards adipose tissue while you burn that sugar and calorically everything is going to balance in that way. So insulin can only promote obesity in the context of a hypercaloric diet” (chrismasterjohnphd.com/2016/05/02/the-daily-lipid-podcast-episode-6-why/).

Billy the K
Tucson, Arizona

SO MANY QUESTIONS

Having read most of the information in the latest WAPF publication, I came up with several questions for which I am having difficulty finding answers.

What is the difference in autism rates in the USA versus other countries? One report I saw online showed that



Letters



England's rate of autism had stayed flat since the 2000s. To what is this attributed? Why is the incidence so much higher in the male population?

Is there any way that children can be vaccinated in the “old fashioned” way? My kids were born in the 1960s and had the older vaccines, which appear not to have contributed to autism. I have also been wondering whether the same vaccines are given around the world. If not, what is the variable?

I am constantly at a loss to understand how scientists can fail to investigate such an enormous problem to the greatest of depths—except in the case of such scientists like Stephanie Seneff and a few others, whose findings are not included in any assessments by the CDC and other government agencies.

Thank you for your great efforts to keep us informed on such important matters.

Charlene Stone
Santa Rosa, California

Kendall Nelson, WAPF vaccine point person, replies: Regarding autism rates, a consistent finding is that when countries have high numbers of mandated or recommended vaccines, they tend to have higher rates of autism—as do the U.S., Canada, Australia, Japan, United Kingdom, Sweden, Denmark, Brazil, Portugal and Hong Kong. In the UK, about one in one hundred people have autism; these rates continue to rise they have not stayed flat. The reason often given for that rise is “better diagnosis,” not greater prevalence. There is definitely a higher incidence of autism in males. However, we need more research to figure out why. A

good film to watch about this is Vaxxed, vaxxedthemovie.com. Vaccines have always had serious side effects. Vaccinating “the old-fashioned way” simply means that fewer vaccines were given. There is no such thing as “greening our vaccines.” The nature of vaccines is such that they always contain toxic preservatives and adjuvants. We also don’t know who will be harmed by even a single vaccine. The same vaccines are not given in every case around the world. For instance, the live polio vaccine is no longer given in the U.S., but is still given in less developed nations. And the mercury-based additive thimerosal, while not used as much in the U.S., is still in use in vaccines aimed at Third World countries. Pharmaceutical companies also tend to bring out experimental vaccines in the third world. For more resources, visit the WAPF vaccine page at westonaprice.org/vaccinations/.

CHANGES IN EVERY SPECTRUM OF LIFE

Every aspect of my entire life changed when I discovered the Wise Traditions diet. I understood food in a way that I never had before. I understood what it meant to be truly nourished from the inside out in a way that went against so much of what I was hearing in the media and in other “food journals.” I realized why I was feeling less than great on a then eight-month vegetarian diet. I understood my continuous draw towards animal foods and animal fats in a way that didn't make me feel guilty anymore. I started eating as close to the Wise Traditions diet as possible and had a dramatic shift in

how I felt within my body. From then on, I have felt incredibly happy with my decisions around food, and my body and mind were the proof I could share when anyone asked me about my controversial food choices.

I support this diet philosophy 100 percent while also respecting the way others choose to eat that may be different from my own. At the end of the day, it's about your body and what makes you feel like you're thriving from within, able to create and take an active part in your life from a place of full energy, vitality and well-being. I highly recommend the work of the Weston A. Price Foundation. I have seen changes in every spectrum of my life—mood, energy, vitality, spirituality and well-being.

Butter.bebe
Montreal, Canada

BINGE LISTENING

The last few days, I've been binge-listening to the Wise Traditions podcasts. Each episode features a different guest, and they're jam-packed with information about eating real, traditional foods. Near and dear to my heart are the episodes that discuss farming, gardening and animal husbandry, but I must say the lessons on healing our bodies through food are absolutely mind-blowing. I can't get enough! I'm addicted to the way this real food and real living makes me feel! Now it's time to dig deeper and keep up this momentum!

Emily Dragos
Wilderhomestead, North Carolina



Letters



CHANGED MY LIFE

Just a note to let you know how this Foundation helped me. I used to suffer from a stomach ulcer. I went to the doctor and all they did was push pills. I suffered for about twenty years.

In 2007, I was on the Internet researching ways to heal it naturally. I stumbled upon your site, and it changed my life!

I'm a farm girl and I read how good raw milk is for you. I thought to myself, I can milk! So I got a milk cow and milk goats and my ulcer healed. That was nine years ago.

This weekend I went to my first Mother Earth fair and had a blast! I found your booth and want to join. Thank you for all you do!

Robin Sharp
Grafton, West Virginia

SHOULD A CHILD BE VACCINATED?

The current school of medical thought believes that the injection of vaccine ingredients makes children healthier by preventing disease symptoms from appearing. However according to the classical hygienic school of health (which is based on experience rather than belief), the symptoms we associate with diseases are not the diseases, they are the mechanisms by which the body externalizes (gets rid of) toxins (or "disease"). As Hippocrates famously said, "We call them diseases, but they are the cure of diseases." From that perspective, vaccines do not prevent disease; rather vaccines cause illness.

Childhood vaccination is an eighteenth-century medical procedure that

injects toxins such as bacteria, viruses, various drugs and synthetic (unnatural) chemicals deep into a child's body. This is a bizarre procedure that drives these substances so deep that the child is unable to externalize the poisons—in other words, in most cases, the child has no symptoms. The child becomes sick on a very deep level and as a result is more likely to be weaker, less healthy and more prone to chronic and lifelong diseases.

Research bears out the hygienic school's approach to wellness: in every study ever done comparing vaccinated to non-vaccinated children, non-vaccinated children are healthier than the vaccinated children, or conversely the vaccinated children are sicker than the non-vaccinated children.

Children who are permitted to get sick naturally with "childhood diseases" as nature intended, and experience the symptoms of acute illness that include fever, vomiting, skin eruptions, diarrhea, etc. which are dramatic, uncomfortable and annoying but almost always temporary when properly managed—have less cancer, less heart disease and less chronic illness as children and as adults.

Why? Because acute disease detoxifies and cleanses the body. Since ancient times, physical, intellectual and emotional growth spurts have been noticed after a child goes through an acute illness.

In our "scientific" arrogance, we have forgotten to respect the wisdom of the body, God-given wisdom, nature, the innate (inborn) intelligence of the body, or whatever term you wish to use. Our incredibly sophisticated body

has a reason for generating symptoms, especially in children, and we must respect the natural cycles of life and work with them, knowing they are there for a reason far beyond our limited scientific, intellectual understanding. Simply stated, the choice is clear; in order to have healthier children, do not vaccinate them.

Vaccines make our children seriously sick—the U.S. government has paid over three billion dollars to compensate the families of children who were killed or left seriously damaged after routine vaccination. This number reflects only a fraction (only 1-2 percent or less according to some studies) of the damage that occurs, because pediatricians rarely report vaccine injuries.

Serious damage from vaccination is acknowledged. Just read the pharmaceutical product inserts that come with vaccines—and not generally given to parents—and you'll read some pretty nasty things observed after vaccination including encephalitis (inflammation of the brain), all kinds of immunological and neurological conditions, plus death (crib death and SIDS). Let us not forget conditions as varied as allergies and autism—which were rare before vaccination.

Do the theoretical benefits of vaccination outweigh the real risks? Absolutely not. Death from diseases of childhood were at least 98 percent gone before vaccines were in mass usage because of improved living conditions. Vaccines never prevented death from childhood or other illness, and that includes the darlings of vaccination proponents—polio and smallpox. Look behind the curtain and you'll discover



Letters



the vaccines had no effect on eliminating these diseases, and in fact increased their occurrence.

Do I recommend you vaccinate your children? Only if you want to risk autism, immune system damage, a chronically sick child, mental and brain disorders, and increased chances of heart disease and cancer as an adult—and receive no benefit. In one word—don't! There are no benefits—only risks. There are zero good reasons to vaccinate a child.

Tedd Koren, DC
Gwynedd Valley, Pennsylvania

TB: FRAUDULENT THEORY AND TEST

Recently here in the UK, a farmer named Ernie Durose had his cows test “positive” to the fraudulent TB test, leading to the slaughter of his herd. Officials blame the TB on infection by a badger. However, I believe that bovine TB is not coming into the body from outside, but rather that it is coming out, and that it is a natural immune response. The mistake that we make is

to translate this immune response into a disease, which is not the case at all.

Without even seeing his cows, I would guess that Farmer Durose's cows were healthy animals, not sick animals. I believe that when we inject a cow with foreign matter (as in the TB skin test), the immune system will detect this foreign matter and will then try to repair it (eating it up or walling it off), which it does by generating bacteria from within, in the sense of an internal metamorphosis. This is the beginnings of TB. This means that it is coming from within, not coming from outside of the body.

They say that the mode of transmission from badger to cow remains unknown, but I claim that it is not only unknown, it does not even exist outside of the body. Cow-to-cow transmission is assumed, meaning it is theoretical, but this does not and cannot happen in the sense of disease-causing bacteria coming from the environment. This is because environmental bacteria are not the same as TB generated from within. If this is so, then to slaughter cattle, based on a test that generates TB through the foreign matter contained in the test itself, is sheer madness. The academics and vets have got this TB process the wrong way around. This is why their thinking and their science is stagnant, and so they have absolutely nowhere to go.

There's no need to mass-slaughter healthy animals since TB was never infectious. It's a monumental blunder, but as we all know, the academics cannot turn around and rectify their mistakes. Clearly, the conflicts of interest involved in this issue are a far bigger problem than bovine TB. The main

issue is that the science should come before the politics, but in this issue, the politics are driving the science, and that is a recipe for a total disaster. The end product: a pointless war on the natural world.

John Wantling
Rochdale, UK

LESSONS LEARNED

In August last year, I was with my father while he had surgery to explore an aggressive growth on his pancreas. We were not surprised to learn that the growth was, in fact, pancreatic cancer, the “worst case scenario.” Up until this point my dad had been one of the healthiest people I knew, biking ten or more miles every day, rain or shine; felling trees and chopping wood; fixing all manner of things; riding his motorcycle (which he had recently purchased at seventy-eight years young), loving life, and especially loving and caring full time for my mother (she has fallen into a sad state of dementia these last ten years); planning for the future in which he hoped to be free to fly kites and go on bike rides again with his kids and grandkids.

But that day last summer took his life away. The surgeon removed half of his pancreas, a vital organ. But it wasn't the cancer that killed him; in fact, just four months later he was cancer-free! He had recruited me to help him come up with a plan to beat the cancer using alternative therapies. We found a functional medicine doctor in his home state of Wisconsin who helped him with our protocol which included low-dose naltrexone, high doses of vitamin C, alpha lipoic acid, CBD oil, pancreatic enzymes, and a mostly

NEW PERK FOR WAPF MEMBERS-ONLY FACEBOOK!

We have created a closed Facebook group for WAPF members who are interested in connecting with each other and with chapter leaders worldwide. This is a perfect forum for advice on how to implement the Wise Traditions diet or to ask particular questions about Nourishing Traditions' or other similar recipes. Go to facebook.com/groups/westonapricefoundation/ or look up “The Weston A. Price Foundation Members' Group” and ask to join today!



Letters



organic diet rich in high-quality fats and low in carbs, in addition to a few other things. The oncologist within his conventional medical system agreed to track the cancer, and appeared humbled and dumbfounded when in December I sat before her to receive the results of various tests and scans. She could not argue with the answers before her: no sign of cancer!

So what killed him? Well, two months after his surgery he began experiencing severe sciatic pain. No cause could be found, and no chiropractic or other treatment would help. Nothing but rounds of prednisone, which of course he knew he could not continue, and bouts in the hospital when even the highest doses of oxycodone and fentanyl couldn't cut it. On his last hospitalization, it was noted that he was very hoarse, not from a cold or other illness, but from screaming out in unbearable pain! When my siblings and I think of our poor father in such a state, it drives us to tears.

From the outset, I had encouraged my father to monitor his blood sugar as it just made sense; after all, he was missing half of the very organ that he needed to keep his blood sugar under control! But he assured me that the doctors weren't worried (they weren't), and they would test it when he had an appointment. If they weren't worried, he wasn't either. And as he was on a fairly low-carb, high-fat diet for the cancer, I dismissed it as well, hoping that the diet would take care of it. (Dad still enjoyed a heavily buttered slice of bread in the morning, a beer in the afternoon, or a very occasional small treat, and I was not about to insist on the deprivation!)

Dad liked for me to attend his doc-

tor appointments when possible, and I often did during those last five months of his life, making frequent trips to be with him to help. So I was with him when his neurosurgeon finally gave the diagnosis, and prognosis, for Dad's condition: demyelination of the sciatic nerve brought on by high blood sugar. The good doctor told my father that if he controlled his blood sugar, the myelin sheath should regenerate in six to twelve months. He saw this often, he said, and Dad was now declared "diabetic." It mattered not, as I gently protested, that my father wasn't truly diabetic, but that he was missing half of his pancreas and thus the ability to control blood sugar was duly sliced in half as well!

I sat with my father while the dietitian discussed his new diabetic diet, very high in carbs. My father knew better and took it with a "grain of salt," which of course was literally restricted in the hospital and rehab, along with fat! And as he spent many weeks in and out of that hospital and rehab, he was doomed!

Should I mention those rounds of prednisone which Dad was given for the sciatic pain, driving his blood sugar into the four hundred range, and holding it there for up to two weeks at a time! So, he was put on metformin. A band aid. Meanwhile, I consulted with the functional medicine doc, who was frustrated that Dad wasn't working with him on all of his issues. After all, that is what functional medicine doctors do: they work with the whole, not just parts. But as this was not covered by insurance and was quite expensive, Dad chose to stick it out with his health "care" system. Dr. Schwartz urged Dad to continue with

the alpha lipoic acid and do several rounds of vitamin B₁₂ shots, methylcobalamin in particular. Dad was okay with this, but wanted it to be within the "system" so as to have costs covered by his insurance and doctors. So, I made phone calls and gave information to the nurses in charge. They were intrigued, curious, but not convinced. Thus, it was declared unnecessary.

On February 10th, my sister took our father to what would be his last appointment with the neurosurgeon, who gave him no hope. None. My sister overheard Dad telling the doctor that if this was what life was to be, it just wasn't worth living.

Two days later, he was gone.

So what is to be learned from this? If only more people would hear! Our current medical paradigm does not heal people—far from it. It is a system of disease management, of controlling symptoms by slicing and dicing, of prescribing chemical pills for ailments, instead of understanding and correcting the root cause. It is a system that looks at individual parts rather than the whole. And it never actually "cures" anyone of anything! It is a business, and it robs people of not only money but their very lives every single day. This is not to say that there are not many fine people out there truly dedicated to healing, as they understand it, and helping people. It's just that their understanding is deeply flawed, and literally dangerous.

Maureen Diaz, chapter leader
Linden, Virginia



Letters



MEDICAL COMMUNICATION COMPANIES

I recently ran across an important *Journal of the American Medical Association* article (*JAMA*. 2013;310(23):2554-2558) entitled “Medical Communication Companies and Pharmaceutical Industry Grants.” It is about a new form of medical propaganda, physician conflicts of interest, the cunning of Big Pharma’s advertising and how most physicians become mis-informed and mis-educated while at the same time pressured to spend less and less time with their patients and to rely on the over-prescribing of Big Pharma’s synthetic chemical drugs. As I often told my patients, it only takes two minutes to write a prescription but it takes twenty minutes not to write a prescription.

The article exposes the under-the-table flow of money that keeps popular online medical communication companies (MCCs) full of plausible (but often misleading) information that is consistently favorable to the disinformational agendas of Big Pharma. These sites never mention the multitude of iatrogenic disorders (diseases that are caused by doctors or Big Pharma’s prescription drugs). Iatrogenic diseases are a seriously taboo subject that Big Pharma and the medical establishment want to keep hidden from their drug-taking patients.

These MCC online sites maintain the ignorance Big Pharma desires for us too-busy prescribing physicians and our often “desperate-for-unbiased-information” patients who suspect that they are being sickened by the synthetic chemicals and vaccine ingredients

that have been prescribed for them, substances that can be addictive, neurotoxic, dementia-inducing and a cause of mitochondrial toxicity, especially in the case of psychiatric drugs.

The article summarized below reveals the actual names of the biggest culprits: the amoral, for-profit, multinational Big Pharma corporations that annually hand out tens of millions of dollars to their co-opted and obedient MCC recipients who are—unfortunately—trusted by both physicians and their confused patients.

What may be worse is the fact that these for-profit MCCs are responsible for providing dis-informational “content” for the thousands of health “journalists” (who are notorious for having little or no medical science background).

One sees those health journalists all over the newspapers, radio, TV and Internet with their ubiquitous and very plausible articles that are often directly fed to them from the MCCs and their sugar daddy, Big Pharma. The health journalists, in reading the prepared-for-immediate-re-publication content, feel that they are doing research, whereas what is actually happening is deception and indoctrination.

The same thing happens on the nightly news when Big Pharma’s MCC-generated videos are shown on the TV news without the local station ever mentioning the gross conflicts of interest. This common tactic does represent “easy journalism” for our too-busy health writers who have deadlines to meet.

A decade ago, when medical establishment and lobbying groups like the

AMA, APA, AAP, AAFP, etc., warned us about getting our information from the Internet, they were afraid, sometimes with justification, of the influence of the complementary and alternative medical community that was out there. Many consumers found out that what was out there was frequently useful and sometimes curative—a big threat to more than one medical establishment group. These self-help sites were often nutrition-based and often provided education and information that could make unnecessary an unaffordable physician visit that usually ended with an unaffordable prescription or two. Real cures—rather than perpetual, lifelong drug or disease “management”—often could be found online. It was only later, when the establishment came to dominate the Internet with their propaganda (and Google’s ranking system, which always puts Medscape and WebMD on top), that I came to agree with their warnings about online medical disinformation. Only now, we have to be worried about what the medical establishment is trying to convince us to do.

Remember the truism: “Whoever pays the piper, calls the tune.” This has never been more true than at this time of astronomical health care and bankrupting prescription drug costs.

Gary G. Kohls, MD
Duluth, Minnesota 

Gifts and bequests to the
Weston A. Price Foundation
will help ensure
the gift of good health
to future generations.

Caustic Commentary

Sally Fallon Morell takes on the Diet Dictocrats

GRAIN DRAIN

We have often warned against breakfast cereals made of extruded grains; unpublished research indicates that these cereals can be extremely toxic to the nerves in the digestive system. Now we have a published study that gives a partial explanation for these effects. Researchers at the Norwegian Institute of Food, Fisheries and Aquaculture Research fed pigs either whole grain barley or oat groats, and these same grains in extruded form. The extruded grains resulted in lower gut bacteria diversity along with higher levels of pathogenic bacteria such as streptococcus. Grains that had not been extruded resulted in higher levels of bacteria producing beneficial lactic acid and butyric acid. Said the researchers: “This is the first study showing that cereal extrusion affects the microbiota composition and diversity towards a state generally thought to be less beneficial for health. . .” (*Food and Function* 2016;2).

MYTH OF THE CRISPR

Genetically modified organisms (GMOs) are created by hit-and-miss techniques involving “gene guns” that shoot DNA-coated metal or DNA-containing bacteria (usually *E. coli*) into a seed. The GMO seed industry has countered concerns about such imprecise methods by introducing a new process for gene editing called CRISPR, said to “precisely alter” the DNA of living organisms. However, a new study has found that the gene-editing technology can introduce hundreds of unintended mutations into a genome. Using the CRISPR technique to correct a gene that causes blindness in mice—a procedure that was successful—the researchers found that the entire genome had sustained more than fifteen hundred single-nucleotide mutations and more than one hundred larger deletions and insertions. None of these DNA mutations was predicted by computer algorithms that

the researchers use to look for off-target effects (*Nature Methods* 2017). Of course, the best way to prevent blindness in any animal is to provide a pre-conception and pregnancy diet rich in vitamin A and cofactors, but such a sensible approach does not provide a lot of jobs for microbiologists.

GENETICS FOR THE BEFUDDLED

Greeks living in the mountainous villages of Zoniana and Anogia in Crete eat lots of fatty lamb and cheese, yet they have low rates of heart disease and are known for living well into old age. Of course, this has researchers scratching their

heads because, as everybody knows “eating foods that contain saturated fats raises the level of cholesterol in the blood [wrong], and high levels of low density lipoprotein (LDL) cholesterol in the blood increase the risk of heart disease and stroke [wrong].” What are scientists to do when confronted with evidence that contradicts the reigning



medical dogma? They retreat to the last refuge of the scoundrel: genetics. Genetic testing of all the villagers found a genetic variant unique to the inhabitants of these two villages, and since our DNA is “the operating instructions for each one of us which determine how we look and who we are [wrong again],” that must explain how the villagers can eat a terrible diet but still be healthy. What these findings do *not* explain is why so many other groups also have low rates of heart disease in spite of a diet high in animal fats: the inhabitants of France, Austria, Switzerland, Iceland, Finland, Ikaria, Okinawa and Sardinia, and the Inuit of Alaska and Canada. Do these groups also have a genetic variant that protects them? Or is the diet itself the something that protects them? (bbc.com/news/health-40047262).

Caustic Commentary

MORE BEFUDDLEMENT

A study from Ireland has caused more befuddlement among researchers. Scientists from University College Dublin have found that eating cheese, which is high in saturated fat, does not raise LDL-cholesterol. This is confusing to the researchers because “eating foods high in saturated fats like cheese can increase your risk of developing high blood cholesterol [wrong]” and “High blood LDL cholesterol is one of the main risk factors for heart disease and stroke [wrong]. . . when there is too much LDL cholesterol in a person’s blood it sticks to the walls of arteries blocking blood flow [sigh, wrong again].” Furthermore, those who ate a lot of dairy foods had a lower body mass index, lower percentage of body fat, lower waist size and lower blood pressure. The explanation: “We have to consider not just the nutrients themselves but also the matrix in which we are eating them in and what the overall dietary pattern is, so not just about the food then, but the pattern of other foods we eat with them as well.” Seems like that explains everything. The scientists also found that those who consumed lowfat milk and yogurt tended to have higher intakes of carbohydrates and higher LDL-cholesterol levels (medicalxpress.com/news/2017-03-lots-cheese-cholesterol.html). Maybe the explanation for these strange findings is the fact that the whole theory is wrong; but so indoctrinated are most scientists that they never questioning the diet-heart theory itself, but only craft lame explanations for all the paradoxes.

ALL WRONG ABOUT SALT

When you eat too much salt, you become thirsty and drink water so as to dilute the amount of sodium chloride in the bloodstream, keeping sodium at the proper levels and excreting the excess. Or so the “salt equation” goes. Research by the Russians indicates that this theory may be all wrong. New studies of Russian cosmonauts, held in isolation to stimulate space travel, found that eating more salt made them less thirsty but paradoxically hungrier. Subsequent experiments found that mice burned more calories when they got more salt, eating 25 percent more just to maintain their weight. It seems that salt stimulates the production of more glucocorticoid hormones, which break down fat and muscle in the body. In addition, salt-detecting neurons in the mouth control the urge to drink, and more salt results in a lower sensation of thirst. “The work suggests that we

really do not understand the effect of sodium chloride on the body,” said a study author. “These effects may be far more complex and far-reaching than the relatively simple laws that dictate movement of fluid, based on pressures and particles” (https://www.nytimes.com/2017/05/08/health/salt-health-effects.html?_r=0). Still, these preliminary results suggest that increasing salt may be a useful strategy for weight loss, as long as the diet contains sufficient levels of fat to mitigate increased feelings of hunger.

A NATIONAL EMBARRASSMENT

The United States is twenty-seventh in the rate of infant mortality, behind Canada, Europe and even most countries in Eastern Europe, with over six deaths per one thousand live births. A baby born in the U.S. is nearly three times as likely to die during the first year of life as one born in Finland or Japan. Even though health care spending levels in the U.S. are significantly higher than those of any other country in the world, a baby born in the U.S. is less likely to see his first birthday than one born in Hungary, Poland, or Slovakia. Researchers are scratching their heads for an explanation, noting that thirty-five hundred American babies die of Sudden Unexpected Infant Death (SUID) each year. Of course, WAPF members know very well that the abysmal dietary advice given to expectant mothers results in poor health of the baby from day one, which will only go downhill as the baby imbibes poor quality breast milk or infant formula, followed by weaning on rice cereal, applesauce and Cheerios. On top of that, most U.S. babies get more than a dozen vaccinations before the age of one, starting with the HepB vaccine before leaving the hospital. Toxins—from Roundup to fluoride—in our food and water also take their toll.

BAD FOR BABIES

New research indicates that a number of medically approved practices adversely affect the health of our children. Conventional advice promotes dosing all pregnant women with folic acid, but too much folic acid in pregnancy increases the risk for autism (<https://hub.jhu.edu/2016/05/12/too-much-folate-pregnant-autism/>). This study also found that high levels of vitamin B₁₂ in new moms—probably also associated with taking multivitamins—were also associated with autism, although other studies indicate that B₁₂ deficiency is associated with a higher risk of preterm birth (*Am J Epidemiol.*

Caustic Commentary

2017 Feb 1;185(3):212-223). Moms with low weight gain during pregnancy—restricted food intake during pregnancy is often encouraged by medical professionals—are 30 percent more likely to have babies who develop schizophrenia later in life (JAMA Psychiatry. 2017 Apr 1;74(4):339-349). High levels of glyphosate—the “safe” ubiquitous herbicide—in mothers are associated with shorter pregnancies and smaller babies (<http://gmwatch.org/en/news/latest-news/17541-high-glyphosate-levels-in-mothers-leads-to-shorter-pregnancies-and-smaller-babies>). The point is that many approved practices, such as the widespread use of herbicides, taking multivitamins, plant-based diets and discouraging weight gain during pregnancy take their toll on the next generation—the generation depending on us to do our homework and do the right thing to ensure their good health.

UNTRUTH IN LABELING

No product has garnered such widespread consumer disgust as high fructose corn syrup (HFCS). Consumption of high fructose corn syrup has been linked to liver damage, diabetes and blood sugar imbalances, and immune suppression. So what's the beleaguered Corn Refiners Association to do? Change the way HFCS is labeled, of course. Manufacturers are now labeling high fructose corn syrup as fructose. Packaging on products such as General Mills Vanilla Chex cereal now states the product contains no high fructose corn syrup, while the ingredients list contains the simple word, “fructose.” This fructose is actually a manufactured sugar called HFCS-90, which is 90 percent pure fructose, created in factories by the enzymatic conversion of corn starch to sugar. (High fructose corn syrup, or HFCS, contains “only” 42 or 55 percent fructose.) The Corn Refiners Association states, “. . . HFCS-90 is sometimes used in natural and ‘light’ foods, where very little is needed to provide sweetness. Syrups with 90% fructose will not state high fructose corn syrup on the label [any more], they will state ‘fructose’ or ‘fructose syrup.’”

MORE ROLES FOR VITAMIN A

Vitamin A plays key roles in vision and in protecting against infection, and this is where most of the research on this important vitamin has focused. However, vitamin A is also essential for several regions of the brain, especially the hippocampus, needed for learning and memory, and

the hypothalamus, necessary to maintain the body's internal physiological balance, and control of body weight and food intake, among many other roles (*World Rev Nutr Diet*. 2016;115:98-108). In other words, plentiful vitamin A during growth and development will ensure excellent growth, normal sleep patterns, healthy weight, ease of learning and consistent focus—in short, everything a child needs to be healthy, happy and wise. That's why giving liver, egg yolks and cod liver oil is so important for babies and children, feeding practices that conventional medicine discourages.

ANOTHER REASON TO TAKE COD LIVER OIL

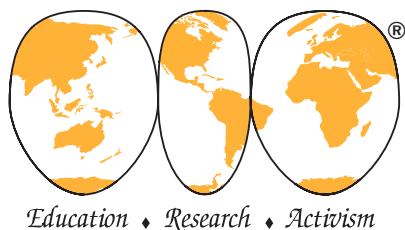
Glaucoma, characterized by a specific structural alteration of the optic nerve, is the second leading cause of blindness in the world, afflicting nearly sixty-seven million people worldwide and causing almost seven million cases of blindness. Citing studies showing that vitamin A along with omega-3 fatty acids both provide protection against glaucoma, Chinese researchers conclude that “Cod liver oil, as a combined supplement of vitamin A and omega-3 fatty acids, should be more effective than single supplement formulations” (*Int J Ophthalmol*. 2011;4(6):648-51). They call for “properly controlled, long-term clinical trials” to determine whether cod liver oil can prevent glaucoma, but for starters, we recommend they interview some WAPF-ers who have taken cod liver oil for many years.

NATURE TO THE RESCUE

Now for some welcome news. Scientists have discovered bacteria that can biologically degrade the widespread plastic polyethylene terephthalate (PET). Other species can gobble up oil spills and radioactive waste. The field of bioremediation has a bright and important future. ☺☺

FOR SCIENTISTS AND LAY READERS

Please note that the mission of the Weston A. Price Foundation is to provide important information about diet and health to both scientists and the lay public. For this reason, some of the articles in *Wise Traditions* are necessarily technical. It is very important for us to describe the science that supports the legitimacy of our dietary principles. In articles aimed at scientists and practitioners, we provide a summary of the main points and also put the most technical information in sidebars. These articles are balanced by others that provide practical advice to our lay readers.



Wise Traditions 2017

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Friday, November 10 – Monday, November 13

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Amy Berger, author of *The Alzheimer's Antidote*

Dean Bonlie, DDS, expert on magnetism

Natasha Campbell-McBride, MD, Gut & Psychology Syndrome (GAPS)

Carrie Clark, DC, expert on nourishing school lunches

Tom Cowan, MD, author of *Human Heart, Cosmic Heart*

Sally Fallon Morell, MA, author of *Nourishing Traditions*

Lee and Sean Graese, grass-fed buffalo farmers

Ben Greenfield, fitness expert

Becca Griffith, foraging expert

Stefan Hagopian, DO, expert on footwear, beds and chairs

Zoë Harcombe, PhD, obesity researcher, author *The Harcombe Diet*

Reginaldo Haslett-Marroquin, poultry-centered regenerative agriculture

Chris Knobbe, MD, expert on age-related macular degeneration

Kiran Krishnan, expert on intestinal flora

Anna Larsen, expert on wild seafood

Jodi Ledley, author of *Adventures with Jodi*

Celeste Longacre, author of *Celeste's Garden Delights*

Karen Lyke, MS, CCN, DSc, CGP, master nutritionist

Chris Masterjohn, PhD, chrismasterjohnphd.com nutrition blog

Ronda Nelson, expert on thyroid health

Cyndi O'Meara, author *Changing Habits Changing Lives*

Tim O'Shea, DC, expert on vaccine dangers

Laura Schoenfeld, MPH, RD, expert on adrenal health

Pam Schoenfeld, RD, co-director Healthy Nation Coalition

Kim Schuette, CN, nutritional & biotherapeutic drainage therapies

Stephanie Seneff, PhD, expert on glyphosate

Kim Thompson, RYT, movement instructor

Sylvia Burgos Toftness, expert on nourishing broth

Donald Weber, DC, expert on good health basics

Cilla Whatcott, PhD, HD, RHom, *There Is a Choice: Homeoprophylaxis*

Lindsea Willon, expert on insulin resistance

Louisa Williams, MS, DC, ND, author of *Radical Medicine*

Will Winter, DVM, expert on pastured livestock

LOCATION AND ACCOMMODATION

The conference will be held at the Hyatt Regency Minneapolis at 1300 Nicollet Mall, Minneapolis, MN.
A special conference room rate of \$155 per night plus taxes and fees has been negotiated for our attendees.

This rate is offered for single through quadruple occupancy.

Phone Hyatt Reservations at (800) 421-1442 and mention the Wise Traditions conference,
or book online at <https://aws.passkey.com/go/2017WISETRADITIONS>.

Special conference rates for hotel rooms available only until October 20, 2017 or until all rooms are sold.

Self-parking is a special rate of \$19 per day.

SAVE UP TO \$50 IN CONFERENCE FEES IF YOU REGISTER BY SEPTEMBER 17th!

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PRE-CONFERENCE AND POST-CONFERENCE ACTIVITIES



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**THURSDAY, NOVEMBER 9
at 6 pm**

FTCLDF FundRAISER

farmtoconsumer.org/WAPF2017

MONDAY, NOVEMBER 13

Will Winter, DVM: Guided Farm Visit

Sally Fallon Morell, MA:

Master Cooking Class—Three Meal Plans: Fish, Chicken and Lamb

Chris Masterjohn, PhD: A Master Seminar on Nutrition

WISE TRADITIONS 2017 REGISTRATION FORM

First Name _____	Last Name _____	Name for Badge _____
Organization/Affiliation _____		
Address _____		
City _____	State _____	Zip Code _____ Country _____
Phone _____	Fax _____	<input type="checkbox"/> Check here if you are interested in donating food.
E-mail _____	Website _____	<input type="checkbox"/> This is my first Wise Traditions conference.

☐ Check here to reserve Gluten & Casein free conference meals. OR ☐ Gluten free only. OR ☐ Casein free only. Register for GF and/or CF children's meals below.

MEMBERSHIP: become a member of the Foundation and receive our quarterly journal, full of informative articles as well as sources of healthy food. WAPF members receive a conference registration discount.

☐ \$40 US Annual Membership ☐ \$25 US Reduced (financial hardship) ☐ \$50 Canadian/International

FULL REGISTRATION includes conference materials, Friday sessions, lunch and dinner, Saturday sessions, lunch and Awards Banquet, Sunday sessions and brunch (*except for no-meal option). Does not include Monday.

	By Sept 17	After Sept 17
<input type="checkbox"/> Full Registration Member	\$440	\$490
<input type="checkbox"/> Full Registration Non-Member	\$480	\$530
<input type="checkbox"/> Full Registration Student/Senior Member	\$340	\$390
<input type="checkbox"/> Full Registration Student/Senior (62+) Non-Member	\$365	\$415
<input type="checkbox"/> Full Registration Adult with Child in Kid's Program	\$340	\$390
<input type="checkbox"/> Full Registration No-Meal Option (<i>meals not included*</i>)	\$300	\$350

WEEKEND REGISTRATION includes sessions with lunch and banquet on Saturday and lunch on Sunday.

<input type="checkbox"/> Weekend Registration	\$300	\$330
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DAILY REGISTRATION includes conference materials, sessions and lunch (no dinner).

<input type="checkbox"/> Daily Registration <input type="checkbox"/> Friday <input type="checkbox"/> Saturday <input type="checkbox"/> Sunday	\$130	\$150
<input type="checkbox"/> Saturday Traditional Diets Seminar, Sally Fallon Morell	\$60 (limited to 200)	
<input type="checkbox"/> Monday Guided Farm Visit 7-6 (includes lunch)	\$100	\$100
<input type="checkbox"/> Monday WAPF Cooking 9-4 (includes lunch)	\$100	\$100
<input type="checkbox"/> Monday Chris Masterjohn Seminar	\$100	\$100

EVENING EVENTS

<input type="checkbox"/> Friday Dinner and Events	\$60	\$60
<input type="checkbox"/> Saturday Evening Awards Banquet	\$75	\$75

Please select the sessions you plan to attend. This helps us plan but you can change your mind.

Friday seminar choice – ☐ GAPS ☐ Thyroid Health ☐ Adrenal ☐ Farming

Saturday Choice – ☐ Hormone Health ☐ Nourishing Traditional Diets ☐ Cooking/Practical ☐ Wellness

Sunday Seminar Choice – ☐ Mind and Eyes ☐ Diet, Exercise, Diabetes ☐ Fertility/Children ☐ Cooking/Gardening/Practical

CHILDREN'S PROGRAM (Child must be age 3-12 and potty trained.)

Child's Name(s) _____ Age(s) _____
 @ \$225 per child for Friday - Sunday includes Friday lunch & dinner, Saturday lunch, Sunday brunch
☐ GF/CF meals OR ☐ GF only OR ☐ CF only for ____ children OR ____ @ \$150 per child, includes no meals.

CEUS FOR RNS & LACS. A \$5 certificate of attendance is available. It suffices for RDs & nutritionists.

☐ RN ☐ LAc – ☐ All 3 days \$65 ☐ Friday \$25 ☐ Saturday \$25 ☐ Sunday \$25// ☐ RD or nutr. ☐ Cert of Attend. \$5.

PAYMENT PROCESSING

Total Due: _____ ☐ MasterCard ☐ Visa ☐ Check Payment/Money Order (make payable to WAPF)

Full Name _____

Card Number _____

Exp. Date _____

Security Code (3 digits on back of card) _____

CHAPTER LEADERS

☐ I am a chapter leader.
☐ I plan to attend the Chapter Leader Meeting
 Thursday, Nov 9, 10 am - 4 pm

How did you hear about the conference?

☐ WAPF journal ☐ WAPF email
☐ Friend/colleague ☐ WAPF postcard
☐ Blog ☐ Twitter or FB
☐ Web advertisement ☐ WAPF website
☐ Print advertisement ☐ Radio
☐ Another conference ☐ Chapter
☐ Other, please specify _____

What is your current occupation?

☐ Medical practitioner ☐ Farmer
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☐ Chiropractor ☐ Retired
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☐ Agriculture professional ☐ Journalist
☐ Artisan worker ☐ Chef
☐ Other, please specify _____

THREE WAYS TO REGISTER:

1. **PHONE** (540) 722-7104

2. **FAX** (540) 301-3536

3. **MAIL**

WAPF Wise Traditions Conference
 1900 Jones Rd
 Winchester, VA 22602

PLEASE NOTE:

One adult registration per form, please. Forms submitted without payment will not be processed.

FOR FURTHER INFORMATION

wisetraditions.org
 registrar@ptfassociates.com

**NO REFUNDS will be issued after
 December 31, 2017**

By submitting this form, I authorize Wise Traditions to charge the applicable registration fees. I understand that all cancellations must be submitted in writing and must be received by October 20, 2017 to be eligible for a refund, less a \$25.00 administrative fee. All refunds will be issued following the conference. Substitutions will be permitted at any time. Registration packets will not be mailed and must be picked up on-site at the conference registration desk at the Hyatt Regency Minneapolis Hotel.

Wise Traditions 2017

Minneapolis Schedule

THURSDAY, NOVEMBER 9

10:00-4:00 Chapter Leaders Meeting

06:00-9:00 FTCLDF FundRaiser Dinner *(not included with conference registration)*

FRIDAY, NOVEMBER 10

07:00-07:45 Kim Thompson: Gentle Movement

08:00-08:45 Kim Thompson: How to Sit Comfortably

Track I: Gut & Psychology Syndrome – Natasha Campbell-McBride, MD

10:00-12:00 Gut & Psychology Syndrome, Part I

01:30-03:00 Gut & Psychology Syndrome, Part II

03:30-05:00 Gut & Psychology Syndrome, Part III

Track II: Nourishing Your Thyroid: The 7 Key Principles for Optimizing Thyroid Health –

Ronda Nelson, PhD

10:00-12:00 Part I: Understanding How Your Thyroid Works

01:30-03:00 Part II: Bridging the Nutritional Gap

03:30-05:00 Part III: Proper Testing, Support and General Recommendations

Track III: Stress Proof: Creating a Diet and Lifestyle to Recover from "Adrenal Fatigue" or HPA-D –

Laura Schoenfeld, RD, MPH

10:00-12:00 Part I: Defining "Stress" and the 4 Main Triggers of Adrenal Fatigue (HPA-D)

01:30-03:00 Part II: How Diet and Exercise Help (or Harm) Your HPA Axis Function

03:30-05:00 Part III: Supplements, Sleep, and Stress Management for Promoting A Healthy HPA-Axis

Track IV: Farming

10:00-12:00 Reginaldo Haslett-Marroquin: Poultry-Centered Regenerative Agriculture

01:30-03:00 Lee and Sean Graese: #itsallaboutthatgrass: The Story of Northstar Bison

03:30-05:00 Will Winter, DVM: Pasture-Based Farming

Friday Evening Activities

8:00-10:00 Ask the Practitioner Panel with Kim Schuette, CN, Natasha Campbell-McBride, MD, Tom Cowan, MD, Ronda Nelson, PhD, Louisa Williams, DC

8:00-10:00 Kiran Krishnan: Forget What You Know About Probiotics – A Paradigm Shift

8:00-10:00 Dean Bonlie, DDS: Magnetism

8:00-10:00 Film *What's With Wheat* followed by Q&A Session with Cyndi O'Meara

SATURDAY, NOVEMBER 11

06:00-06:45 Kim Thompson: Gentle Movement

07:00-07:45 Kim Thompson: Release Low Back Tension

Track I: Plenary Session: Hormone Health

09:00-10:15 Karen Lyke, MS, CCN, DSc, CGP: The HPA (Hypothalamus-Pituitary-Adrenal) Axis: An Introduction to the Major Hormones that Operate and Maintain the Body

10:45-12:00 Kim Schuette, CN: Recovery from Bio-Identical Hormones

01:45-03:00 Chris Masterjohn, PhD: A Balanced Hormonal Milieu

03:30-04:45 Lindsea Willon: Tone Your Hormones: How Exercise Affects Insulin Resistance & Inflammation

Track II: Nourishing Traditional Diets – Sally Fallon Morell, MA

09:00-12:00 Characteristics of Healthy Diets

01:45-03:00 Know Your Fats

03:30-05:00 How to Change Your Diet for the Better

Wise Traditions 2017

Minneapolis Schedule

SATURDAY, NOVEMBER 11 (continued)

Track III: Cooking/Practical

09:00-10:15 Becca Griffith: Fat Rendering

10:45-12:00 Stefan Hagopian, DO:

Chairs, Beds and Footwear – Negotiating Their Pervasive Influence in Our Daily Lives

01:45-03:00 Celeste Longacre: Ferments, Ferments, Ferments!

03:30-04:45 Sylvia Burgos Toftness:

Bread and Soup: The How's and Why's of Making Bone Broth and Baking Sourdough Bread

Track IV: Wellness

09:00-12:00 Stephanie Seneff, PhD: Everything You Wanted to Know About Glyphosate but Were Afraid to Ask

01:45-04:45 Tom Cowan, MD: The Fountain of Youth is a Fountain: The Story of Deuterium-Depleted Water

06:30-10:00 pm Awards Banquet

Keynote: Zoë Harcombe: Real Food on Trial

SUNDAY, NOVEMBER 12

06:00-06:45 Kim Thompson: Gentle Movement

07:00-07:45 Kim Thompson: Relieve Neck and Shoulder Tension

Track I: Nutrition for the Mind and Eyes

09:00-10:20 Amy Berger: Nourish Your Neurons: Protection Against Alzheimer's with Good Nutrition

10:30-11:50 Chris Knobbe, MD: Macular Degeneration – Preventable and Treatable with an Ancestral Diet?

01:30-02:40 Jodi Ledley: Eliminating Migraines, Chronic Pain and the Many Other Related Symptoms of Abnormal Nerve Function

03:00-04:20 Chris Masterjohn, PhD: Fat-Soluble Activators for Brain and Eyes

Track II: Diet, Exercise, Diabetes

09:00-10:20 Donald Weber, DC: The Eight Critical Systems

10:30-11:50 Louisa Williams, MS, DC, ND: Exercise Tips from an Exercise Dropout! The Benefits of Active Stretching, Interval Training, and CBD Oil

01:20-02:40 Ben Greenfield: Why You're Not Losing Weight: Fat Loss Frustration & What to Do About It

03:00-04:20 Zoë Harcombe: The Obesity Epidemic: What caused it? How can we stop it?

Track III: Fertility/Children

09:00-10:20 Tim O'Shea, DC: Detoxification Protocol for Autistics and Other Vaccine Injured

10:30-11:50 Pam Schoenfeld, RD: Polycystic Ovary Syndrome

01:20-02:40 Carrie Clark, DC: Baby Whisperer

03:00-04:20 Cilla Whatcott, PhD, HD, RHom, CCH:

Real Immunity: Educate the Immune System Using Homeoprophylaxis

Track IV: Cooking/Gardening/Practical

09:00-10:20 Carrie Clark, DC: Nourishing School Lunches

10:30-11:50 Becca Griffith: Foraging Cuisine

01:20-02:40 Anna Larsen: Wild Fish for Good Health

03:00-04:20 Sandeep Agarwal: Cooking with Spices

Closing Ceremony (4:30-5:30): Michael Schmidt: The Fight for Real Milk

MONDAY, NOVEMBER 13

07:00-06:00 Will Winter, DVM: Guided Farm Visit

09:00-04:00 Sally Fallon Morell: Master Cooking Class – Three Meal Plans: Fish, Chicken and Lamb

09:00-04:00 Chris Masterjohn, PhD: A Master Seminar on Nutrition

Cholesterol Sulfate Deficiency and Coronary Heart Disease

By Stephanie Seneff, PhD

Despite decades of research, atherosclerosis remains a poorly explained phenomenon. The simple story experts present to the public is that excess cholesterol accumulates in the blood and combines with other substances to form an atheroma (also called plaque) that lodges in the artery wall, eventually obstructing flow. Strikingly, however, the lipid deposits accumulate only in arteries and never in veins. Even more striking is the fact that the arteries supplying the heart are the most vulnerable.

The conventional explanation leaves unanswered many questions about the pathogenesis of atherosclerosis and cardiovascular disease. Why does cardiovascular plaque accumulate only in arteries, and preferentially in arteries supplying the heart? What prompts the occurrence of inflammation, which many believe to be a critical factor in heart disease? Why have studies on vitamin D supplementation proved disappointing despite research showing a strong inverse relationship between sunlight availability and heart disease?

To answer these questions, I propose a unifying theory for the etiology of cardiovascular disease. The theory involves cholesterol sulfate, a molecule that circulates in the bloodstream and performs a variety of important regulatory functions. I believe that the cause of heart disease is an inadequate supply of cholesterol sulfate to the heart. When there are pathologies that impair the normal conditions for making cholesterol sulfate, an atheroma develops as an alternative means of supplying the heart with vital cholesterol sulfate. When neither the normal nor back-up mechanisms are able to make adequate cholesterol sulfate, the outcome is heart failure, a much worse prognosis than atherosclerosis.

A number of diverse observations involving various forms of sulfur support the hypothesis that impaired sulfur supply to the vasculature is the key factor in cardiovascular disease. For example, early studies on primates showed that a high-fat, high-cholesterol diet fed to monkeys (not a normal diet for them!) could induce atherosclerosis, but that simultaneous supplementation with sulfur-containing nutrients was protective.¹ Similarly, experiments on rats showed that

a diet supplemented with excess cholesterol, cholic acid (a bile acid) and vitamin D₂ could induce aortic lesions expressing calcification and plaque formation, but it was possible to prevent such lesions completely through simultaneous supplementation with chondroitin sulfate (a modified sugar molecule containing oxidized sulfur).²

As another example, children with disorders in the metabolism of cysteine (a sulfur-containing amino acid) develop atherosclerosis-like arterial damage at an early age.³ Interestingly, the consumption of garlic—a rich source of sulfane sulfur—is inversely correlated with the progression of cardiovascular disease.⁴ Finally and remarkably, synthetic hydrogen sulfide donors (molecules that release therapeutic hydrogen sulfide) can protect mitochondria in endothelial cells (the thin layer of cells that line the interior of blood vessels) from oxidative damage.⁵

CHOLESTEROL SULFATE SYNTHESIS

Normally, keratinocytes (the predominant cells found in the epidermis), red blood cells (RBCs) and platelets produce cholesterol sulfate

When there are pathologies that impair the normal conditions for making cholesterol sulfate, an atheroma develops as an alternative means of supplying the heart with vital cholesterol sulfate.

ARTICLE SUMMARY

- Impaired sulfate supply to the heart is a key factor in cardiovascular disease.
- Red blood cells, platelets and cells in the skin synthesize cholesterol sulfate catalyzed by sunlight.
- Cholesterol sulfate, unlike cholesterol, is water soluble, so it can travel freely in the blood rather than packaged up inside an LDL particle.
- Glyphosate, the active ingredient in the pervasive herbicide Roundup, disrupts sulfate synthesis in the skin and disrupts bile flow from the liver, leading to a systemic deficiency in cholesterol sulfate.
- Sulfate provides negative charge in the blood vessel wall and for the red blood cells and platelets, promoting flow.
- Sulfate also maintains the structured water that lines the vessel walls and presents a slick, frictionless surface to the red blood cells.
- The atheroma actively recruits cholesterol to be ready to produce cholesterol sulfate when sulfate becomes available.
- Inflammation, while damaging to surrounding tissues, performs a useful service by promoting an oxidative environment necessary to make sulfate.
- A heart attack is a well-choreographed sequence of events aimed to restore sulfate supplies by oxidizing taurine, which is stored in large amounts in the heart.
- Statin drugs, by reducing the supply of cholesterol sulfate to the heart, will lead to heart failure down the road, a worse prognosis than cardiovascular disease.

in the skin, catalyzed by sunlight. Therefore, in accordance with my unifying theory, one would expect sunny climates to reduce heart disease risk. Indeed, geographical data show an inverse relationship between cardiovascular disease and annual sunlight availability.⁶ France and Spain have much lower rates of death from heart attacks than the United Kingdom. In a study conducted in the British Isles, mean annual sunshine hours accounted for 49 percent of the variance in mortality from coronary heart disease.⁷

Despite related studies showing that vitamin D deficiency is associated with cardiovascular disease risk,⁸ placebo-controlled trials have failed to demonstrate any benefit from vitamin D₃ supplementation.⁹ Why? My coauthors and I suggest that, where heart disease is concerned, the benefit of sunlight comes from cholesterol sulfate synthesis rather than vitamin D₃ synthesis. In a 2012 article in *Entropy*,¹⁰ we proposed that sulfate is produced from reduced sulfur sources in the skin, catalyzed by sunlight.

The enzyme that likely carries out this function is endothelial nitric oxide synthase (eNOS), the same enzyme that produces nitric oxide to relax the artery wall. The enzyme eNOS is a member of the cytochrome P450 (CYP) super-

family of enzymes, which metabolize drugs and synthesize cholesterol, steroids and other lipids. I hypothesize that the overuse of sunscreen has played a dual damaging role, suppressing sunlight catalysis but also actively disrupting eNOS's sulfate-producing function due to sunscreen's aluminum content.¹¹ Many other environmental chemicals also disrupt CYP enzymes, including mercury^{12,13} arsenic,¹⁴ cadmium¹² and glyphosate,^{15,16} the active ingredient in the pervasive herbicide Roundup. When aluminum or other toxic chemicals disable eNOS, it is unable to make enough sulfate to supply the needs of the endothelial cells, creating a systemic sulfate deficiency problem.

It is well established that eNOS produces superoxide as well as nitric oxide, but biologists have always viewed this as a pathology.¹⁷ At the same time, the fact that RBCs contain abundant eNOS baffles biologists, because nitric oxide would disrupt hemoglobin's ability to transport oxygen.¹⁸ Viewing eNOS superoxide synthesis as an alternative function to oxidize sulfur offers an explanation for both of these puzzles.

GLYPHOSATE AND HYPERLIPIDEMIA

Getting back to coronary artery disease, most people assume that elevated serum lipids (hyperlipidemia) are a causal factor. Tens (if not hundreds) of millions of people receive advice from their doctor to take a statin drug to protect them from heart disease because their serum lipid levels are high. Therefore, one would expect a plot over time of the hospital discharge rates for hyperlipidemia to be highly correlated with a similar plot for coronary artery disease. This is not the case, however. As the figure below shows, the correlation coefficient value is a weak 0.39 (whereas greater than .70 would indicate a strong correlation), with

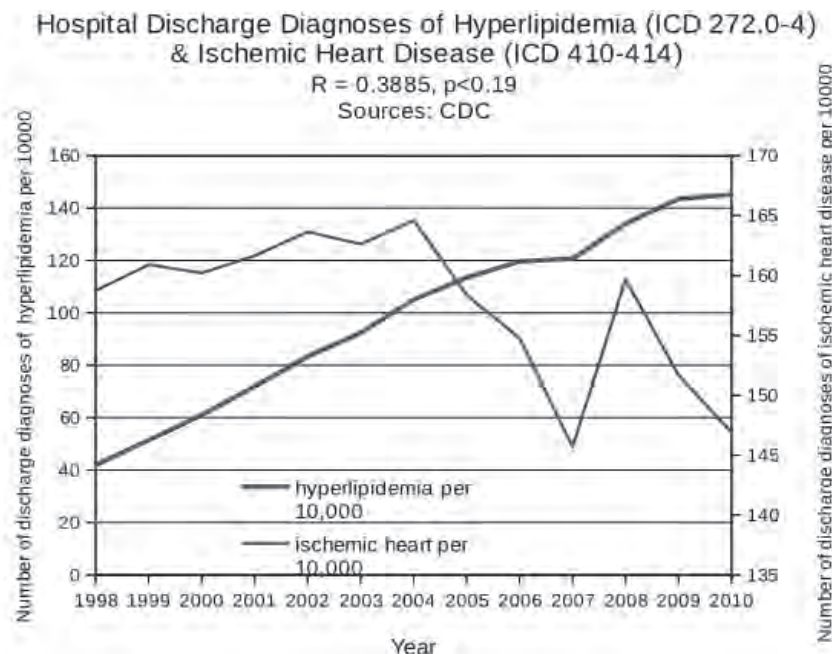


FIGURE 1: Graph of incidence of hospital discharge diagnoses of hyperlipidemia (ICD 272.0-4) and ischemic heart disease (ICD 410-414) over time from 1998 to 2010, available from the CDC.

an insignificant p-value of 0.19. Although correlation does not always imply causation, it is surprising and noteworthy when a factor presumed to be causative is *not* correlated with the disease.

In comparison, there is a very strong and highly significant correlation between hyperlipidemia and glyphosate application to corn and soy crops ($R = 0.97$, $p < .000018$), as shown in the second figure. Glyphosate application rates have steadily increased over time due to the widespread appearance of glyphosate-resistant weeds growing among the crops that are increasingly engineered to be Roundup Ready. Serum lipids have risen in tandem with the increase in glyphosate use, despite the increase in statin drug prescriptions. As the second figure suggests, it is not unreasonable to propose that glyphosate is causal in hyperlipidemia.

Glyphosate disrupts CYP enzyme activity in the liver, which can explain the contribution of glyphosate to hyperlipidemia.¹⁹ A rat study assessing the impact of glyphosate, clofibrate (a cholesterol-lowering drug) and two phenoxyacid herbicides on liver function showed that glyphosate reduced the activity of CYP enzymes in the liver much more than the other substances investigated.¹⁹ Multiple CYP enzymes are needed to produce bile acids,²⁰ which facilitate digestion and absorption of lipids and regulate cholesterol homeostasis. Bile acids normally export a large amount of cholesterol via the digestive system. Impeded bile acid synthesis due to a defective *CYP7A1* gene produced neonatal cholestasis (blocked bile ducts) and hypercholesterolemia (specifically, elevation in serum LDL) in mice fed a normal chow diet.²¹

Given that eNOS is a CYP enzyme, it is entirely plausible that glyphosate disrupts eNOS's ability to synthesize sulfate. We would expect eNOS exposure to glyphosate in the red blood cells, because glyphosate

export via the kidney requires transit through the vasculature. Disrupted synthesis of cholesterol sulfate will necessitate an increase in the synthesis of LDL particles to transport cholesterol in its unsulfated form, because cholesterol is not water-soluble and therefore must be stored inside a lipid particle for transport.

ATHEROMA AS ALTERNATIVE SUPPLIER OF CHOLESTEROL SULFATE

In another *Entropy* publication, my coauthor and I suggested that when red blood cells produce cholesterol sulfate while traversing the surface veins, catalyzed by sunlight, they release the cholesterol sulfate to the tissues in the capillaries.²² This refurbishes both the cholesterol and the sulfate supply to the endothelial wall, maintaining vascular health.

The glycocalyx is a complex mesh of sulfated sugar chains that lines the interior wall of all blood vessels and is important for vascular health. Heparan sulfate proteoglycans (HSPGs) in the glycocalyx play many important roles,²³ mediating cellular signaling mechanisms and promoting uptake of various nutrients, including LDL clearance by liver cells.²⁴ Perhaps the most important role of cholesterol sulfate in the capil-

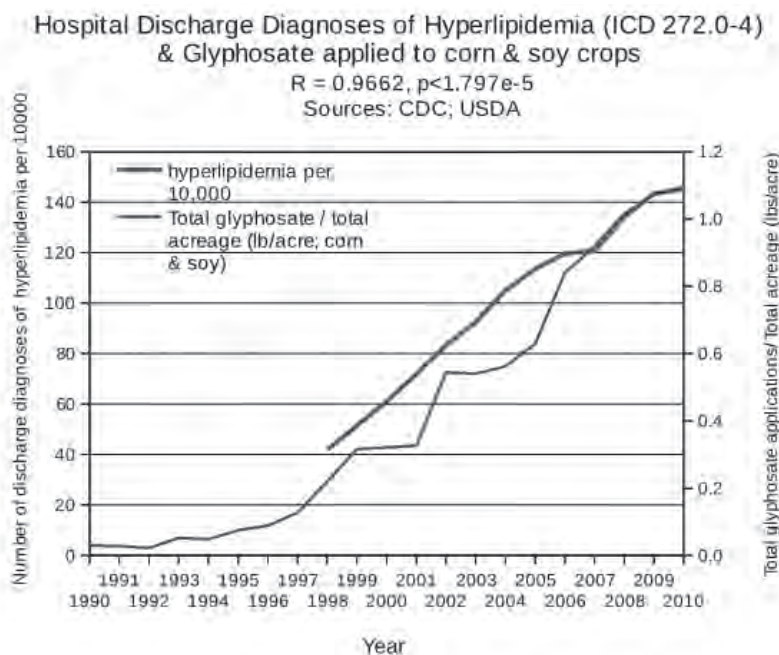


FIGURE 2: Graph of incidence of hospital discharge diagnoses of hyperlipidemia (ICD 272.0-4), available from the CDC, and the rate of glyphosate application to corn and soy crops, obtained from the U.S. Department of Agriculture.

I hypothesize that *C. pneumoniae* play a special role in enhancing the supply of heparan sulfate to an atheroma, and they may well be able to do so in the absence of functional CYP enzymes.

laries is to maintain a thick layer of gelled water coating the inner surface. This structuring effect on water is due to the “kosmotropic” properties of sulfate,²⁵ which provides a near-frictionless surface contact with the red blood cells¹⁰ that is further enhanced by the negative charge in both the glycocalyx and the red blood cell membrane.

As the red blood cells drop off cholesterol sulfate in the capillaries, they also lose their negative charge, which means that the venous end has a lower pH than the arterial end. An increase in carbon dioxide content on the venous side enhances this effect, as is immediately following cardiac arrest, when carbon dioxide accumulates in the veins and the voltage difference between arteries and veins sharply increases.²⁶ Thus, an electrical gradient also propels the negatively charged red blood cells through the capillaries. Capillary resistance is the dominant factor in high blood pressure, which we can therefore expect to correlate with an impoverishment in cholesterol sulfate in red blood cell membranes and heparan sulfate in the capillary walls. Both increased friction at the walls and decreased force from the electromagnetic field impede movement of red blood cells through the capillaries.

The glycocalyx is constantly shed and rebuilt in a dynamic process that is promoted by inflammatory agents.²⁷ Complement and endotoxin (from bacteria) both induce glycocalyx shedding through a G-protein coupled receptor response. Such matrix remodeling is especially active during ischemia and reperfusion (the two critical stages of a heart attack). Membrane-bound

matrix metalloproteinases (MMPs) can detach fragments of the glycocalyx from the artery wall, which can then be redistributed to other parts of the vasculature (such as the capillaries) as reinforcements. Thus, it is highly conceivable that the glycocalyx in atherosclerotic regions is a source of raw materials needed to maintain the health of the heparan sulfate proteoglycans (HSPGs) in the capillary glycocalyx.

As an alternative means of supplying cholesterol sulfate to the heart, an atheroma is uniquely suited to cholesterol sulfate’s manufacture by platelets. The sulfate is supplied by breaking down homocysteine thiolactone, a precursor that is ready to become sulfate under the right circumstances; the lipid stores in the macrophages supply the cholesterol; the red blood cells supply adenosine triphosphate (ATP) to energize the reaction; and the inflammatory response provides superoxide needed to oxidize the sulfur atom in homocysteine.¹⁰ HDL-cholesterol plays a critical role, because platelets will take up cholesterol only from AI-HDL (the “good” variant of HDL), and they will increase their production of cholesterol sulfate three-hundred-fold in the presence of 3’-phosphoadenosine-5’-phosphosulfate (PAPS), a source of transferrable sulfate produced by sulfation of ATP.²⁸ (Note that when ATP is in short supply, this will affect the ability to utilize any sulfate that is synthesized, resulting in blood with overly high viscosity due to sulfate’s property of gelling the blood.)

The lipoprotein apolipoprotein E (ApoE)

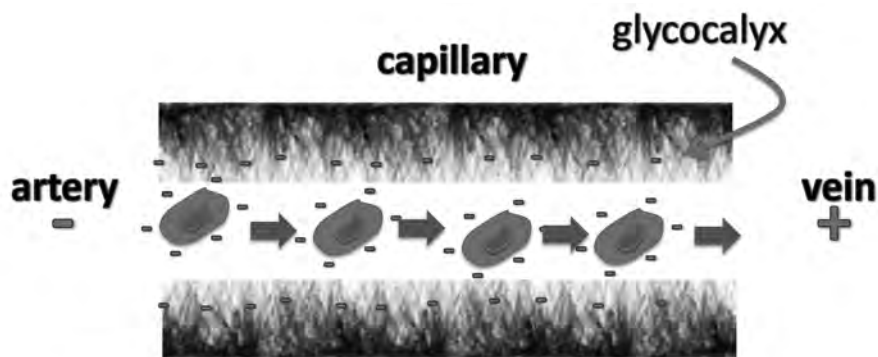


FIGURE 3: Red blood cells are propelled through the capillary due to the electromagnetic force created by the voltage difference between the artery and the vein. Negative charge in the glycocalyx (due to sulfates) repels red blood cells (also negatively charged) and prevents them from sticking to the wall. Gelled water lining the capillary forms a slick frictionless surface to support low resistance.

plays a significant role in inducing the export of cholesterol from the macrophages into AI-HDL, but it also induces enrichment of sulfate in the HSPGs.²⁹ This implies that it escorts cholesterol sulfate rather than cholesterol in its unsulfated form out of the cell. This idea is also supported by the fact that cholesterol sulfate, unlike cholesterol, is water-soluble, and therefore readily crosses the cytoplasmic gap between the endothelial reticulum and the plasma membrane. Both homocysteine³⁰ and gamma-glutamyltransferase (GGT)^{31,32} are risk factors for heart disease, and both can be explained because they provide substrate for sulfate synthesis when the normal sun-catalyzed sulfate synthesis mechanisms are not working. GGT breaks glutathione down into cysteinylglycine and glutamate, and cysteine from cysteinylglycine can be oxidized to form sulfate.³³

Atheromata (plural of atheroma) harbor various pathogenic microbial species, the most significant of which is probably *Chlamydia pneumoniae*.^{34,35} The strong association between chronic *C. pneumoniae* infection and atherosclerosis has prompted some researchers to identify it as the pathogen implied in a chronic infection theory of heart disease. While many proponents of this hypothesis enthusiastically have embraced the concept of antibiotic treatment specific to *C. pneumoniae*, clinical trials have been disappointing.³⁶

C. pneumoniae are dormant except when internalized into host cells. Within these cells, they produce a unique form of heparan sulfate, using a set of enzymes that are not found in any other known bacterial species.³⁷ I hypoth-

esize that *C. pneumoniae* play a special role in enhancing the supply of heparan sulfate to an atheroma, and they may well be able to do so in the absence of functional CYP enzymes.

MULTIPLE PATHWAYS TO HEART FAILURE

Deaths from heart attack have steadily decreased in the industrialized world over the past few decades,^{38,39} but we are simultaneously experiencing an increasing health care burden in an emerging epidemic of heart failure.⁴⁰ In fact, heart failure is the single most frequent cause of hospitalization for those over sixty-five years old, affecting five million Americans as of 2010.⁴¹ I maintain that heart failure is a direct sequela to insufficient supply of cholesterol and sulfate to the heart. Since an atheroma plays a significant role in supplying these nutrients, it can be anticipated that factors that interfere with the healthy function of the atheroma will lead, over time, to heart failure.

Other pathways to heart failure furnish additional observations. For example, Chagas disease is an infectious disease endemic to regions of South America caused by the *Trypanosoma cruzi* pathogen.^{42,43} Patients who recover are susceptible to premature death by heart failure many decades later. These individuals suffer from frequent small heart attacks but are remarkably free of atherosclerosis.⁴³ The explanation for this unique profile follows logically from the fact that *T. cruzi* produces an antigenic molecule that closely mimics cholesterol sulfate.⁴² As a result, Chaga disease patients develop antibodies to cholesterol sulfate. This would render the

Total cholesterol levels under two hundred milligrams per deciliter increase risk of dying from heart failure by up to three-fold.

PATHOLOGY OR THERAPY?

SUPEROXIDE/INFLAMMATION: Inflammation is necessary to trigger the cascade response that ultimately restores sulfate supplies to the vasculature through oxidation of sulfur-containing molecules like cysteine, homocysteine, hydrogen sulfide gas and taurine.

ATHEROMA: The atheromata in the artery wall supplying the heart actively recruit cholesterol and fats so that they can be ready to produce cholesterol sulfate once sulfate becomes available, and replenish the heart's supply of this critical nutrient.

CLOSTRIDIA PNEUMONIAE: This microbe infects the artery wall where it can perform an important service, providing heparan sulfate to the heart.

HEART ATTACK: The complex cascade that takes place during a heart attack appears to be aimed at producing sulfate by oxidizing taurine molecules that are stored in the highest concentration in the heart and released during a heart attack.

A novel way to view taurine is as another potential buffer for sulfate renewal in times of acute deficiency.

synthesis of cholesterol sulfate by an atheroma counterproductive while leading to system-wide deficiencies in cholesterol and sulfate.

Down syndrome (trisomy 21) provides another interesting example. Down syndrome is associated with a low risk of atherosclerosis^{44,45} combined with premature susceptibility to heart failure⁴⁶ and Alzheimer's disease.⁴⁷ A key enzyme present on chromosome 21 is Cu/Zn superoxide dismutase (SOD), which is 50 percent overexpressed in association with Down syndrome.⁴⁸ SOD dismutates superoxide to hydrogen peroxide, thus reducing the bioavailability of superoxide for the oxidation of reduced sulfur sources (such as homocysteine thiolactone and cysteinylglycine derived from glutathione)³¹ to form sulfate. Down syndrome patients are susceptible to Alzheimer's at least twenty to thirty years earlier than one would normally expect, and dementia is clinically detected in association with Down syndrome at least three times more frequently than in individuals without trisomy 21.⁴⁹ It is probable that sulfate deficiency plays a significant role in the Alzheimer's brain, as evidenced by the severe deficiency in sulfatide, the only sulfonated lipid, observed in association with Alzheimer's disease.⁵⁰

Statin drugs likely represent another pathway to heart failure. Many have argued that statin drugs produce pleiotropic effects (so-called beneficial effects that are not the drugs' main or intended action) through an anti-inflammatory effect,⁵¹⁻⁵³ and, further, that other treatments aimed at reducing inflammatory signaling might be effective treatments.⁵⁴ I predict that both statin therapy and these other treatments instead will lead to heart failure. Statins disrupt G-protein coupled receptor signaling via their suppression of the synthesis of geranylgeranyl pyrophosphate, leading to defective protein prenylation (lipid modification),⁵⁵ which explains their induction of arterial calcification.⁵⁶ It is plausible

that statin drugs promote heart failure through impairment of cholesterol sulfate synthesis in the atheroma, both by reducing the bioavailability of LDL to the atheroma and by interfering with the inflammatory response.

Not surprisingly, low cholesterol is consistently associated with poor survival statistics in heart failure.⁵⁷⁻⁵⁹ Total cholesterol levels under two hundred milligrams per deciliter increase the risk of dying from heart failure by up to three-fold.^{57,58} One group of researchers provocatively asks: "Could elevated total cholesterol, which is so firmly established to be deleterious for the development of coronary heart disease and coronary heart disease mortality, actually turn out to be good for patients with chronic [heart failure]?"⁵⁹

THE ROLE OF TAURINE

Taurine plays a critical though as yet poorly understood role in cardiovascular disease. Taurine is the only sulfonated amino acid. The highest concentrations of taurine are found in the heart, where taurine represents 50 percent of the free amino acid pool,⁶⁰ with large concentrations also stored in the brain and liver. Although some bacteria can utilize taurine as a fuel source,⁶¹ it has long been maintained that mammalian cells cannot metabolize taurine.⁶² However, preoperative infusion of taurine decreases reperfusion injury following coronary bypass surgery,⁶³ and in rat studies, taurine supplementation has improved heart function following a heart attack.⁶⁴

Blood platelets also retain taurine. Studies on dogs, cats and humans have demonstrated a direct linear relationship between plasma taurine levels and platelet taurine levels.^{65,66} Platelets from taurine-deficient cats and humans are more sensitive to clotting stimuli.⁶⁶ Studies in dogs have shown that ischemia (heart attack) induced a 47 percent loss of taurine in the heart's left

WHY THE ATHEROMATA ARE CONCENTRATED IN CORONARY ARTERIES

The heart is arguably the most important organ in the body, and it needs a constant supply of cholesterol and sulfate in order to stay healthy and maintain its blood supply. Cholesterol is actively recruited into the arteries rather than the veins, because it can then be released as cholesterol sulfate once sulfate becomes available, which will then immediately enter the coronary capillaries to supply this critical nutrient to the heart's vascular supply.

ventricle and a 26 percent loss in both atria.^{67,68}

Human white blood cells produce an enzyme called myeloperoxidase (MPO) during ischemia and reperfusion injury.⁶⁹ Elevated MPO is an established risk factor for cardiovascular mortality following artery grafts.⁷⁰ MPO often serves as a potent bacteriocidal weapon,⁷¹ potentially linking it to the infectious theory of heart disease.^{35,72} Hypochlorite, produced in response to MPO, avidly oxidizes many sulfhydryl-dependent proteins, leading to platelet activation and causing white blood cells to attach to the walls of blood vessels. It has been proposed that taurine protects from these damaging effects by reacting with and neutralizing hypochlorite to form taurine chloramine,⁷³ a much more reactive compound than taurine. As we have seen, taurine is released from the heart during ischemia and would be readily available in the serum because it is not taken up by the platelets.⁷⁴ However, taurine chloramine activates complement,⁷⁵ which in turn promotes an inflammatory response, providing oxidizing agents that could in theory promote the oxidation of sulfur in taurine chloramine.

Thus, a novel way to view taurine is as another potential buffer for sulfate renewal in times of acute deficiency. Assuming that sulfate insufficiency is an important factor in heart dis-

ease, one should ask whether taurine chloramine can become a substrate for sulfate synthesis. Taurine chloramine already contains sulfur at an oxidation state of +5, so it only needs to oxidize the sulfur from +5 to +6 to produce sulfate. (A positive oxidation state shows the total number of electrons that have been removed from an element to get to its present state.)

Notwithstanding the claim that taurine is not easily broken down by mammalian cells, 25 percent of the traced sulfur in supplemental taurine turns up in the urine as sulfate.⁶² One hypothesis is that the gut bacteria metabolize the taurine to sulfate. Moreover, because taurine chloramine is more reactive, perhaps it can be metabolized to yield free sulfate, with microbial infective agents playing a facilitative role. If so, this would justify both cardiac storage of taurine as a back-up source of sulfate during times of severe deficiency as well as the presence of microbes in cardiovascular lesions,^{35,72} lending further credibility to the infectious theory of heart disease.

Taurine's protection during ischemia and reperfusion occurs through an as yet undetermined mechanism.⁷⁶ There is a severe loss of taurine from the heart during ischemia that can lead to heart failure if the taurine is not replenished. A

One hypothesis is that the gut bacteria metabolize the taurine to sulfate.

TABLE 1: SULFUR AND CARDIOPROTECTION

SOURCE OF SULFUR	COMMENTS
Garlic	Offers an excellent source of sulfane sulfur and has been consistently recognized as a healthy supplement. ^{4,89}
Alpha-lipoic acid	Confers cardioprotective benefits ⁹⁰ that may derive from its ability to increase sulfane sulfur levels and rhodanese activity in the heart, liver and kidney. ⁹¹
Chondroitin sulfate	Reduces levels of inflammatory markers such as interleukin 1-beta. ⁹²
Glucosamine sulfate	Reduces levels of inflammatory markers such as interleukin 1-beta. ⁹²
AP39 (synthetic chemical)	Shown in rat studies to supply hydrogen sulfide gas to mitochondria and protect them from DNA oxidation damage, ⁵ potentially representing a promising future prevention and treatment option in humans.
Vanadyl sulfate	Provides cardioprotective benefits ⁹³ that may be due to its ability to supply sulfate, as its sulfate anion dissociates rapidly in solution.
N-acetylcysteine	Has shown significant benefit during acute myocardial infarction through multiple effects, including reduction in oxidative stress, more rapid reperfusion, better left ventricular preservation and function, and reduced infarct size. ⁹⁴
Magnesium sulfate	Achieved a 24 percent relative reduction in all-cause mortality and a 25 percent relative reduction in left ventricular failure in the treatment group during a placebo-controlled experiment on magnesium sulfate supplementation during acute myocardial infarction, ⁹⁵ with the possibility that the sulfate rather than the magnesium was the critical beneficial factor.

The modern lifestyle of sun avoidance and exposure to toxic chemicals through food, sunscreen or other environmental insults results in impaired cholesterol sulfate synthesis in the skin mediated by sunlight.

World Health Organization population study revealed an inverse association between taurine excretion and ischemic heart disease mortality.⁷⁷

Reperfusion causes a burst in oxygen consumption through diversion of the electrons from the electron chain into superoxide production.^{78,79} (The addition of one electron to oxygen produces superoxide.) Although superoxide—a reactive oxygen species—is generally viewed as “bad,” I argue that a key purpose of superoxide production in this instance is to oxidize sulfur (derived from serum cysteine or homocysteine reserves) from a negative oxidation state (-2) to a positive oxidation state (+6), producing sulfate from sulfide and consuming two superoxide anions. In other words, superoxide is necessary as a reactant to be able to produce sulfate from these reduced sulfur sources. Several enzymes working in conjunction with the mitochondrial electron chain are involved in oxidizing hydrogen sulfide to sulfate and thiosulfate.⁸⁰ (In fact, thiosulfate may be the primary source of sulfur that is oxidized by eNOS.¹⁰) Homocysteine thiolactone is converted to sulfate in the presence of superoxide, catalyzed by vitamin A and vitamin C,⁸¹ possibly explaining the positive role of vitamin C in protection from cardiovascular disease.⁸²

Taurine’s widespread health benefits to the cardiovascular system⁸³ include its ability to inhibit the osteoblastic differentiation of vascular smooth muscle cells that leads to artery calcification.⁸⁴ Taurine showed protection against the loss of mechanical function in rat hearts in both a heart failure and ischemia model.⁸⁵ Taurine also suppresses the production of superoxide during reperfusion.⁸⁶ I propose that this beneficial suppressive effect is achieved mainly because

taurine already contains sulfur at a positive oxidation state of +5; hence only one-sixth as much superoxide is needed to produce an equivalent amount of sulfate (+6). The fact that taurine is normally inert also makes it a great choice for buffering as a precursor to sulfate. As previously noted, hypochlorite is needed to convert taurine into the more reactive molecule, taurine chloramine, from which sulfate can be derived with the help of superoxide and perhaps microbial enzymes. Species of clostridium are able to utilize sulfonate forms of sulfur such as taurine as an energy source. More generally, anaerobic bacteria can convert taurine directly to thiosulfate.⁶¹

Experiments have confirmed that taurine can be broken down to sulfoacetaldehyde by neutrophils, with taurine chloramine as an intermediary, through nonenzymatic hydrolysis catalyzed by hydrogen peroxide.⁸⁷ With an adequate source of energy, sulfoacetaldehyde can react with phosphate to produce acetyl phosphate and sulfite. Sulfite can then be oxidized to sulfate via enzymatic action of sulfite oxidase. I propose that this reaction takes place during a heart attack. A China-based study of possible associations between biochemical, dietary and lifestyle factors and cardiovascular disease that did not find any relationship with serum cholesterol but showed a protective effect for molybdenum⁸⁸ could be explained by the fact that molybdenum is a cofactor for sulfite oxidase.

PREVENTION AND TREATMENT OF CARDIOVASCULAR DISEASE

If the ideas proposed here are valid, they suggest some very simple measures that can

HOW TO PROTECT YOURSELF FROM HEART DISEASE

- Make sure that the foods you buy are certified organic, or know your farmer and verify that he or she does not use pesticides.
- Eat sulfur-containing foods such as seafood, eggs, cheese, grass-fed beef, cruciferous vegetables, garlic and onions.
- Include red meat and fish in the diet; they are excellent sources of taurine.
- Get plenty of sun exposure to the skin and eyes without sunscreen and without sunglasses.
- Take frequent hot baths with Epsom salts added to the water.
- Just say “no” to statin drugs.

be taken to decrease the risk of cardiovascular disease. Consuming a strictly organic diet that is rich in sulfur-containing foods and spending significant time outdoors without sunscreen on sunny days (exposing both the skin and the eyes to the sun) are two important lifestyle changes. Conversely, the unifying theory suggests that sun avoidance and consumption of chemical- and glyphosate-laden processed foods are likely to be major contributors to the development of coronary atherosclerosis.

One would expect sulfur-rich soil and water derived from basalt rock to be cardioprotective. People living on islands enriched with sulfur-containing volcanic basalt rock (such as Japan, Iceland and Crete) enjoy a low risk of heart attacks as well as extended life expectancy. For those not living in such locations, many sulfur-containing compounds have been shown to benefit cardiovascular health, and a broad range of biologically active molecules—recognized as being cardioprotective—have in common that they supply sulfur to the body (Table 1, page 23).

THE BODY ELECTRIC

The topic of electricity in the body is beyond the scope of this article, but I want to leave you with an image of a solar-powered electrical circuit connecting all parts of the body, where the “wires” are the blood vessels. As noted, the biosulfates in the glycocalyx play an essential role in maintaining an “exclusion zone” of gelled water lining all the vessel walls, within which electrons are mobilized in the gel and protons at the interface to produce electrical current that powers the muscles and neurons.⁹⁶⁻⁹⁸ Thus, cholesterol sulfate captures sunlight energy in the bound sulfate anion to fuel both mobility and neuronal signaling, just as chlorophyll endows plants with the ability to convert sunlight energy into stored sugars, starches and fats. Life on the earth’s surface has always had access to sunlight as an energy source, and animals and plants have found distinct ways to utilize it.

Animals use sunlight to oxidize oxygen to superoxide which then oxidizes sulfur to sulfate. Cholesterol is the carrier molecule that distributes the sulfate over the vasculature. Cholesterol, too, is oxidized by sunlight to form vitamin D, a signaling molecule that communicates to the

tissues that “all is well.” As the negatively charged red blood cells traverse the capillaries, they create a dynamic electromagnetic signal called the “streaming potential” that oscillates with the rhythm of the heartbeat. Endothelial cells respond to this signal by releasing nitric oxide, which relaxes the vessels and promotes flow.⁹⁹

Cholesterol sulfate is an important source of sulfate to maintain the red blood cells’ negative surface charge and to populate the extracellular matrix of the endothelial wall. This results in near frictionless trafficking of red blood cells through capillaries.

CONCLUSION

Although the processes that take place in atherosclerotic regions of major arteries in the heart are complex, they can easily be explained as a mechanism to assure that the heart receives desperately needed cholesterol sulfate supplies. If eNOS were working properly to produce cholesterol sulfate, and the sulfate carriers that are supposed to be produced in the gut were working properly (derived from the aromatic amino acids coming out of the shikimate pathway that glyphosate disrupts), sulfate would already be well supplied and there would be no need for inflammatory back-up mechanisms to make sulfate “on the spot.”

I maintain that the modern lifestyle of sun avoidance and exposure to toxic chemicals through food, sunscreen or other environmental insults results in impaired cholesterol sulfate synthesis in the skin mediated by sunlight. The resulting pathology—severe sulfate deficiency—necessitates an alternative last-ditch mechanism for cholesterol sulfate synthesis. Thus, cholesterol gets stored in the artery wall to be made readily available for cholesterol sulfate synthesis whenever precursor sulfur sources such as homocysteine or cysteinylglycine are available, along with superoxide and ATP as sources of oxygen and energy to fuel the reaction. In an emergency, a heart attack also can initiate a programmed response that depletes taurine reserves to restore sulfate supplies. In addition, microbes such as *C. pneumoniae* can assist in replenishing heparan sulfate to the artery wall. It is no surprise that as statin therapy has interfered with even these less-optimal forms of cholesterol sulfate production, the risk of heart failure has increased, becoming a major contributor to hospitalization, rising health care costs and mortality. ☯

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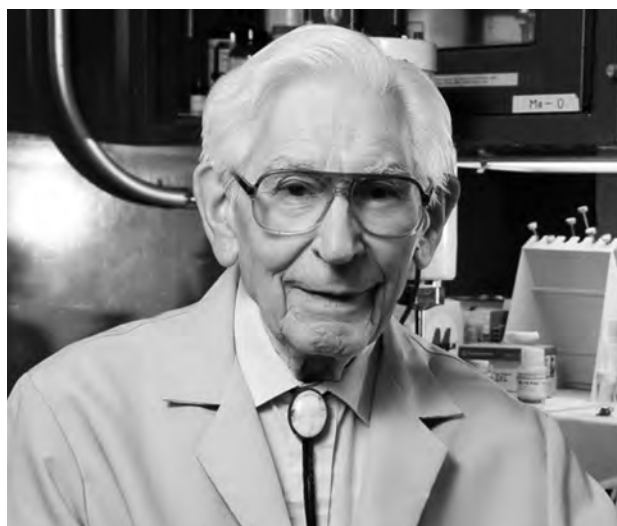
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IN MEMORIAM



FRED A. KUMMEROW, WAPF honorary board member and contributor to *Wise Traditions*, died on May 31st at age one hundred two. A German-born biochemist and lifelong contrarian whose nearly fifty years of advocacy led to a federal government ban on the use of *trans* fatty acids in processed foods, he had been a professor at the University of Illinois, Urbana-Champaign since 1950.

Artificial *trans* fats—derived from the hydrogen-treated oils used to give margarine its easy-to-spread texture and prolong the shelf life of crackers, cookies, icing and hundreds of other staples in the American diet—were ruled unsafe by the Food and Drug Administration partly in response to a lawsuit that Professor Kummerow filed against the agency in 2013, two months shy of his ninety-ninth birthday. The ban, announced in 2015, goes into effect in 2018. In the 1950s, while studying lipids at the university, he analyzed diseased arteries from about two dozen people who had died of heart attacks and

discovered that the vessels were filled with *trans* fats. Professor Kummerow published his findings about the role of *trans* fats in 1957, a time when the prevailing view held that saturated fats like those found in butter and cream were the big culprit in atherosclerosis.

At first dismissed, he gradually won over key members of the scientific establishment. Dr. Walter Willett, a professor of epidemiology and nutrition at the T. H. Chan School of Public Health at Harvard, credited Professor Kummerow with inspiring him to include *trans* fats for analysis as part of Harvard's highly influential Nurses' Health Study, the results of which were published in 1993. One finding showed a direct link between the consumption of foods containing *trans* fats and heart disease in women. It was a turning point in scientific and medical thinking about *trans* fats.

Fred August Kummerow was born on October 4, 1914, in Berlin to a poor family. His father, a laborer, moved the family to the United States in 1923 to join relatives in Milwaukee, where he found a job at a cement block factory. Professor Kummerow said he would likely have been destined for similar work had he not received a chemistry set from his uncle on his twelfth birthday. "It opened the world of science to me," he said.

He received a chemistry degree from the University of Wisconsin at Madison in 1939 and continued there for graduate studies. He received a Ph.D. in biochemistry in 1943.

During and immediately after World War II, while conducting research into lipids at Kansas State University, Professor Kummerow was awarded contracts by the Army Quartermaster Corps to help eliminate rancidity in frozen turkeys and chickens sent to troops overseas. A simple change in the poultry feed solved the problem, making possible the sale of frozen poultry in grocery stores.

Professor Kummerow was one of the first scientists to suggest that the saturated fat in butter, cheese and meats did not contribute to the clogging of arteries and was in fact beneficial in moderate amounts. This hypothesis, controversial at the time, was proved correct. His own diet included red meat, whole milk and eggs scrambled in butter.

CAROL ESCHÉ, MA, DNP, RN, NE-BC, WAPF honorary board member, died in October 2016 of metastatic breast cancer. Carol grew up in Lutherville, Maryland, where she graduated from Goucher College with a BA. Carol then went to Cleveland, Ohio, where she earned her nursing degree and later a DNP from Case Western Reserve. Carol also went to Princeton where she took various nursing courses and programs.

Carol was an advocate of providing real, nutrient-dense foods in hospitals and nursing facilities. As a consultant to the Weston A. Price Foundation, she helped set up Continuing Education Units for talks at *Wise Traditions*, in order to attract more nurses and other health professionals to the *Wise Traditions* diet.



Katherine Czapp, Carol Esche and Elise Stephenson receive the Activist Award at *Wise Traditions* 2004.

Vitamin D Supplementation: Panacea or Potential Problem?

By Pam Schoenfeld, MS, RDN

Vitamin D has far and away been receiving the most attention of all the vitamins, both from the medical community and from health-conscious individuals. Since the new millennium, scientific research on the relationship of vitamin D to health and disease has exploded; for example, in 2015, 13% of the budget of the Office of Dietary Supplements was spent on vitamin D research, with just 6% going to research the other twelve vitamins combined.¹ Population-wide “low-levels” have even been referred to as a “vitamin D deficiency pandemic.”² Eighteen percent of Americans are now taking at least 1,000 International Units (IU) of vitamin D per day, up from 0.3 percent in 2000. More than three percent of adults are now taking amounts greater than 4,000 IU per day, up from 0.1% in 2007, a trend that is raising red flags in the medical community.^{3,4}

Today nutritionally oriented practitioners routinely recommend vitamin D blood testing followed by supplementation, a trend that has been building over the last decade. Interest in testing surged in 2011 when the Endocrine Society published their recommendation that vitamin D levels should be no lower than 30 ng/mL.

Today even conventionally minded doctors are testing and prescribing vitamin D supplements. Medicare experienced an 83-fold increase in vitamin D blood tests from 2000 to 2010, and commercial health insurers saw a 2.5-fold increase from 2009 to 2014.⁵ Having a robust vitamin D level has become akin to having a low cholesterol level, thought to be a marker of good health. Astute readers know that this modern-day quest for optimal health and longevity is fraught with risks.

As with any trend in medicine, many are now questioning the benefits of vitamin D testing. Medscape, an influential source for continuing medical education, recently advised doctors that vitamin D testing is both expensive and not fully reliable, encouraging supplements of 1,000 IU per day for adults as both safe and sufficient without the requirement for testing.⁶ Health insurers are asked to cover the fifty dollar cost of the test, which they state for most cases is not medically necessary; some are now denying reimbursement, which is not surprising since the Institute of Medicine stated in their 2010 report on vitamin D, “[T]he measurements, or cut-points, of sufficiency and deficiency used by laboratories to report results have not been set based on rigorous scientific studies, and no central authority has determined which cut-points to use.”⁷

TYPICAL TESTING AND SUPPLEMENTATION PROTOCOLS

Vitamin D₃ is the natural form synthesized in the skin upon exposure to UVB light, or consumed from animal-based foods; vitamin D₂ is the artificial or plant-derived form often used in food fortification, supplements and pharmaceutical preparations. (See sidebar on page 32 for differences between vitamin D₂ and D₃, and problems with vitamin D supplements.) Both of these forms enter the bloodstream carried on a binding protein and then are immediately taken up by the liver for hydroxylation, or alternatively by the adipose tissue for storage. The liver hydroxylation of vitamin D yields 25(OH)D, or calcidiol, the major

circulating form of vitamin D in the blood with a half-life of about three weeks; this is the form measured by the commonly ordered “vitamin D test.” (Test results may be broken down by the amount of 25(OH) vitamin D₃ versus 25(OH) vitamin D₂, but more often only the sum of the two forms is reported.) Circulating 25(OH)D then undergoes a second hydroxylation either in the kidneys or in target tissues to produce the hormonally active form, 1,25(OH)₂D, or calcitriol. Circulating 1,25(OH)₂D can also be measured, but is most clinically useful in cases of kidney disease, or in diseases that may lead to excessive levels of vitamin D and/or calcium such as sarcoidosis or certain lymphomas.

If serum 25(OH)D comes back below or near the bottom of the laboratory reference range, doctors will typically prescribe vitamin D₂ at a dose of 50,000 IU per week for eight weeks. I’ve observed that after this initial treatment many patients will continue supplementation with an over-the-counter product containing 400 to 2,000 IU (occasionally as high as 5,000 IU) of vitamin D₃ per day, sometimes per the doctor’s advice but more often the patient’s own choosing. There does not always seem to be a clear rationale behind this practice; it may be what the patient finds at the drugstore either in a vitamin D supplement or in a multivitamin, or what the doctor generally recommends for

ARTICLE SUMMARY

- Vitamin D blood testing and oral supplementation have become an almost routine part of conventional medical care.
- Unfortunately, the results of a vitamin D blood test do not always reflect the true picture of an individual's vitamin D status, and whether or not supplementation is warranted and in what amount.
- There is a growing concern that the trend to aim for higher blood levels of vitamin D is not supported by the scientific evidence, and over time may contribute to calcification of the arteries, kidney stones and other health problems.
- Weston A. Price Foundation members will not be surprised by this. Our Foundation has always taught the critical importance of consuming all of the fat-soluble vitamins, as Dr. Price discovered and more recent research has confirmed.
- Various agency guidelines differ as to the optimum amount of dietary vitamin D. There are a number of limitations to testing, and interpretations of vitamin D levels are presented. Serum levels of 30ng/mL are adequate for preventing bone loss.
- Vitamins A, D and K₂ work synergistically. Rich dietary sources of all three vitamins can enhance their health benefits while simultaneously eliminating both the need for testing and concern for potential over-supplementation.

patients. Nutritionally-oriented practitioners often recommend a daily vitamin D₃ supplement (usually between 2,000 and 10,000 IU per day); some are now recommending a vitamin K₂ supplement (100-200 mcg or more) as well. However, it is exceedingly rare for doctors to recommend food or supplements containing vitamin A in the form of retinol.

When I see a patient whose vitamin D test result is just below or near 20 ng/mL, I share with them the view that this level may not be optimal. Patients often respond, “Yes, my doctor told me that my vitamin D was really low.” I assure them that levels in the 20s are not of great concern, especially when tested in the winter. Then I advise them that supplementation to increase their levels to between 30 and 50 can be clinically appropriate, as long as we pay attention to all of the fat-soluble vitamins.

This opens up a discussion about their need for vitamin A, especially when they have one or more signs of low vitamin A status: dry eyes, poor night vision, keratinized bumps on their skin especially on the back of the upper arms, frequent respiratory infections and acne, confirmed by my review of their dietary intake. Even popular diets like the paleo diet and low-carb plans are often very poor sources of preformed vitamin A when patients don’t include nourishing traditional foods.

My daughter Laura, also a registered dietitian, finds that many of her patients, like mine, are low in vitamin A. We both have seen remarkable health improvements in these individuals when a source of preformed vitamin A is provided.

Doctors’ interpretations of vitamin D test results are not surprising—the lab reference ranges are typically 30-100 ng/mL, and in my experience, doctors now consider the ideal vitamin D level to be at least 50-60 ng/mL. Quest Diagnostics Labs suggests interpreting levels with this in mind: “The reference range for total 25(OH)D (20-100 ng/mL) is based on 25(OH)D correlation with physiological parameters that include parathyroid hormone [PTH] concentration and calcium absorption. The range is *not based* on the distribution of levels in an apparently healthy

MY PERSONAL EXPERIENCE

My introduction to the importance of vitamin D came at my first Wise Traditions conference in 2001 where I learned about Dr. Weston A. Price’s research, which clearly demonstrates the unsurpassed value of nourishing traditional diets for reproduction, growth and health at all stages of life. The conference focused on the vital importance of all of the fat-soluble vitamins, not just vitamin D alone, but in conjunction with vitamin A and Dr. Price’s “x-factor,” subsequently identified in 2008 by Chris Masterjohn as vitamin K₂.¹ One of Price’s key findings strongly resonated with me: the quantity of fat-soluble vitamins in traditional diets was ten times higher than that of typical American diets. I knew this was a missing piece in what I thought was my “healthy” semi-vegetarian diet.

I immediately began to add cod liver oil to my and my family’s diet, along with full-fat raw dairy, pastured eggs and liver pâté, excellent sources of all four fat-soluble vitamins, A, D and K₂. Having always enjoyed beef liver and onions as a child, this was a welcome addition to my own diet. I feel immensely grateful that I did not just start supplementing with vitamin D alone, as I had recently learned that I am genetically a very poor converter of carotenes to true vitamin A, not an uncommon trait in people of my ancestry. In a short period of time, we noticed improvements in our health: freedom from colds and infections like strep throat, clearer skin for my teenagers, and for me, resolution of my chronically dry eyes. Through membership in the Weston A. Price Foundation, I continued to learn much more about the roles of the fat-soluble vitamins, information not available through educational materials directed to registered dietitians or functional medical practitioners. In 2016, concerned about the widespread problem of inadequate intakes among women, I wrote on the necessity of vitamin A before, during and after pregnancy.²

My own health care providers now routinely order vitamin D testing. My two most recent results were exactly the same, 37 ng/mL, yet the two nurse practitioners who had ordered them had very different interpretations. One said “your vitamin D is way too low;” the second made no comment, which generally indicates that the results are “unremarkable,” or not of concern. Interpretation of vitamin D test results is still quite variable among practitioners. Never have I had a doctor or nurse ask about vitamin A or K₂ intake or levels, not atypical in medical practice.

My vitamin D levels over the past several years have ranged between the mid-30s and mid-50s, lower in winter, higher at the end of the summer. The results of a baseline bone mass density scan I had in 2007 were well above the mean—my doctor ordered it because she thought I would be at higher risk for osteoporosis since I am small-boned, relatively thin and Caucasian. I feel good about what I have been doing for the past seventeen-plus years: reasonable sun exposure, foods rich in vitamins A, D and K₂, raw and fermented dairy to ensure I am getting easily-absorbed sources of calcium on a daily basis, bone broth for collagen and minerals, and tapering off of supplements containing vitamin D as summer approaches.

1. <https://www.westonaprice.org/health-topics/abcs-of-nutrition/on-the-trail-of-the-elusive-x-factor-a-sixty-two-year-old-mystery-finally-solved/>
2. Vitamin A: The Scarlet Nutrient. The Unfair Stigmatization of Vitamin A during Pregnancy. <https://www.westonaprice.org/health-topics/abcs-of-nutrition/vitamin-a-the-scarlet-nutrient/>.

population” (emphasis added).⁸

With such wide laboratory reference ranges, what can we say with reasonable confidence about the level of 25(OH)D in the blood needed to optimize PTH and calcium absorption, and more importantly, to optimize overall health? Do higher levels reduce other health risks or improve problems such as cancer, autoimmune disease, heart disease or any other chronic condition? Do the benefits of higher levels outweigh any potential adverse effects? Are there potential limitations or problems with testing? Can blood levels of 25(OH)D be translated into rule-of-thumb supplementation guidelines? Is there a better way to evaluate our levels or should we even routinely test at all?

Before I offer answers to these compelling questions, we are wise to consider the practices of the healthy pre-industrial populations Dr. Price visited, populations that neither had knowledge of “vitamin D” (or any isolated vitamin) nor the “benefit” of blood testing.

PRE-INDUSTRIAL POPULATIONS

How did pre-industrial populations obtain vitamin D? While the discovery and isolation of vitamins in the early 20th century is considered a milestone in our understanding of nutrition and health, humans have survived and thrived without the knowledge of which foods contained which vitamins. The populations studied by Price took great care to emphasize the consumption of foods that are now recognized as excellent sources of all the fat-soluble vitamins, including vitamin D: deep yellow butter, seafood including fish eggs, organ meats, insects and animal blood.⁹ In addition, routine sun exposure during the activities of

daily life resulted in significant skin vitamin D synthesis. The modern practice of hours spent “sunbathing” did not exist (see sidebar on page 33).

There are challenges in obtaining adequate amounts of vitamin D from sun exposure and diet alone. Today individuals are often genetically “mismatched” to the climate where they live. (Genetic adaptations require many successive generations.) There is a marked reduction in cutaneous vitamin D biosynthesis in northern latitudes during the winter months, and virtually none above 40 degrees.¹⁰ Darker-pigmented individuals can require five to ten times the duration of sun exposure to produce the same amount of vitamin D as lighter-pigmented persons. With the need to cover the skin during cold weather, it is not unexpected that vitamin D levels can plummet during the winter, made worse by limited summer sun exposure, which can lead to year-round low vitamin D levels.

Contemporary habits of applying and reapplying sunscreens (SPF 8 or greater) can significantly reduce skin vitamin D synthesis. Showering shortly after outdoor activities, and swimming in chlorinated pools may also reduce

D₂ vs. D₃?

Some doctors prescribe vitamin D₂, others recommend an over-the-counter supplement that contains vitamin D₃. What is the difference? Vitamin D₂ is the plant form, ergosterol, found in foods like mushrooms. Vitamin D₃ is the animal form, cholecalciferol, made in our skin but also available from animal fats. The pharmacokinetic properties of vitamins D₂ and D₃ differ, with more consistent and higher serum concentrations of 25(OH)D after vitamin D₃ supplementation. Clinicians are advised to recommend vitamin D₃ supplementation at intervals of four months or less. Longer intervals between doses of vitamin D₂ will result in large fluctuations of serum 25(OH)D concentrations (due to more rapid metabolic degradation via 24-hydroxylation and a lesser affinity to the vitamin D-binding protein¹), therefore the dosing interval with vitamin D₂ is should not exceed fourteen days. The term “calciferol” on a preparation refers to vitamin D₂ and “cholecalciferol” to vitamin D₃.

While the use of vitamin D₃ is generally preferred, a 2013 *JAMA* study found that many of the over-the-counter vitamin D₃ supplements on the market do not contain the amount the label indicates, with the authors more concerned about the fact that they provided too little rather than too much D₃. In any case, only trusted sources should be used if vitamin D is supplemented in isolation.

If your choice for a vitamin D source is a fermented cod liver oil, keep in mind that all natural cod liver oils contain an array of different metabolites derived from vitamin D₃, with a diverse array of biological activities. While magnetic resonance analysis seems to indicate the presence of vitamin D₂, it is likely a mixture of these metabolites. Furthermore, the benefits of natural cod liver oil are often realized without a marked rise in serum 25(OH)D. Masterjohn cautions that this blood test is not only being overused as an indicator of vitamin D nutritional status, but is “being used in an overly simplistic manner.”²⁴

1. Zerwekh JE. Blood biomarkers of vitamin D status. *Am J Clin Nutr*. 2008;87:1087S-91S.

2. American Geriatrics Society Workgroup on Vitamin D Supplementation for Older Adults. *Am Geriatr* 2014; 62:147–152.

3. <http://www.webmd.com/vitamins-and-supplements/news/20130211/vitamin-d-supplements-is-what-you-see-what-you-get#1>

4. <https://www.westonaprice.org/health-topics/cod-liver-oil/vitamin-d-in-cod-liver-oil/>.

the quantity of vitamin D our bodies make. Age is a factor too; adults older than seventy need about three times the duration of sun exposure to produce the same amount of vitamin D as children. Non-solar sources of vitamin D are essential in these cases, just as populations living near the poles consumed vitamin D-rich foods as part of their native diet: the organs of ocean fish especially the liver and the fish liver oils, and seal oil and whale blubber (also rich sources of vitamin A!).¹¹

HOW MUCH VITAMIN D?

What amount of oral vitamin D is required when sun exposure is inadequate? Clearly, many individuals are less able to obtain vitamin D from sun exposure, and modern low-animal fat diets do not provide much naturally occurring vitamin D.¹² Following today's conventional approach of paying attention to only vitamin D intake, this problem appears to be fairly simple to address: use the results of the most recent blood test, supplement accordingly, then retest and adjust the dosage as needed. Selecting a blood level of 25(OH)D to target then becomes the first decision—not always so straightforward though. For example, if the result is between 20-30 ng/mL, this is, according to the Institute of Medicine, “sufficient,”^{13,14} according to the Endocrine Society “insufficient,”¹⁵ and according to the Vitamin D Council “deficient”¹⁶ (see chart below). Interpreting the tests depends on which health agency a practitioner or individual relies upon.¹⁷

The next step would be to choose a dose of vitamin D that is both safe and effective. As stated before, it is common to prescribe or

recommend supplementation when a patient's levels are below 30 ng/mL, in accordance with guidelines from the Endocrine Society and the Vitamin D Council. Some practitioners may choose to be conservative with a dose of 1,000 IU per day, especially if they don't expect routine follow-up visits or testing by their patient; 2,000-4,000 IU per day might be chosen if the patient tests below 30 ng/mL and does not get adequate sun exposure; 5,000-10,000 IU per day or more for short term or if the patient will be retested in a few months; even up to 10,000 IU long term, which according to the Vitamin D Council, should not present a risk of toxicity. Rule-of-thumb supplementation has been suggested as follows: to raise serum 25(OH)D by approximately 1 ng/mL, supplement with 100 IU oral vitamin D daily. However, individual responses to standard dosages often vary considerably¹⁸ – several caveats are discussed below.

DESIRABLE VITAMIN D LEVELS

Despite a lack of consensus, what appears to be a desirable vitamin D level? Vitamin D, in the activated form of 1,25(OH)₂D, acts on many different cells in the body both through calcemic roles, regulating calcium and phosphate concentrations, and noncalcemic roles. Noncalcemic roles include cell differentiation and antiproliferative actions in a wide range of cell types such as the immune, muscle and gastrointestinal systems.¹⁹ Research has shown inverse associations between vitamin D levels (regardless of sun exposure) and the incidence of several diseases, pointing to roles in the prevention of heart disease, cancer, diabetes, autoimmune disease, neuromuscular impairment and more.²⁰ The evidence to support an optimum range of serum 25(OH)D for health outcomes is strongest when considering the impact of vitamin D on bone health.¹³ Calcium homeostasis is achieved by the influence of 1,25(OH)₂D on calcium absorption, uptake and release from bone tissue and excretion from the kidneys. Adequate levels of 25(OH)D are needed to ensure adequate synthesis of 1,25(OH)₂D, important for bone mineralization and general muscle and bone health. Severe vitamin D deficiency can result in hypocalcemic seizures and weak or misshapen bones—rickets in growing children, osteomalacia and osteoporosis in adults.

According to expert opinions, the minimum level of serum 25(OH)D needed for bone fracture prevention ranges between 20-32 ng/mL with desirable 25(OH)D concentrations between 28-32 ng/mL. It is estimated

VITAMIN D FROM SUNLIGHT

Masterjohn has described the practices of healthy pre-industrial societies regarding sun exposure including seeking shade in the midday and using a variety of methods to protect the skin when in the sun, such as primitive forms of sunscreen like coconut oil, body paint and protective clothing. He has also discussed findings which indicate that genetic adaptations direct an increased synthesis of vitamin D in northern indigenous populations, and conversely, an increased degradation of vitamin D in southerly populations.

Indigenous populations are innately adapted to their native climate, allowing their bodies to better control vitamin D production in accordance with their needs. Furthermore, his analysis of the evidence indicates that it does not support the conclusion that levels of 40-60 ng/mL for vitamin D are “natural;” people outside of tropical and subtropical regions may not be genetically adapted to having vitamin D levels so high.

SOURCE: <http://www.westonaprice.org/our-blogs/cmaterjohn/vitamin-d-problems-with-the-latitude-hypothesis/>.

that the average older man and woman will need intakes of at least 800 to 1,000 IU per day of vitamin D3 to reach a serum 25(OH)D level of 30 ng/mL.²¹ In addition, vitamin D supplementation at 600-800 IU per day has been shown in studies to reduce fracture risk when calcium is also supplemented.²² Caution with higher levels accompanied by calcium supplementation is advised: according to the Merck Manual, “target 25(OH)D levels are > 20 to 24 ng/mL for maximal bone health; whether higher levels have other benefits remains uncertain, and higher absorption of calcium may increase risk of coronary artery disease.”²³

The efficiency of calcium absorption in the small intestine increases with higher levels of serum 25(OH)D, reaching a plateau at 32 ng/mL.²⁴ Some studies suggest that the lower end of the IOM reference range for 25(OH)D, 20 ng/mL, may not optimize calcium absorption, and that levels of at least 32 ng/mL may be required.²⁵

Bone mass density (BMD) has been positively associated with 25(OH)D levels, as one might expect. In the Multi-Ethnic Study of Atherosclerosis involving 1,773 adult participants, this association was significant for Caucasian and Asian participants alone; in Hispanics there was a non-statistically significant association. An inverse association was actually found in Black participants: those having 25(OH)D levels less than 20 ng/mL had higher BMD than those with levels greater than 30 ng/mL. Even more surprising may be the finding that 25(OH)D levels were highest among Whites and lowest among Blacks, but BMD was highest among Blacks. The IOM states that “African-Americans present a conundrum, because, although their serum values are lower than those of white counterparts, their rates of osteoporosis and fractures are lower than Caucasians.”²² Thus it appears that when interpreting blood test results, racial differences should be considered as they may influence recommendations for vitamin D supplementation.²⁶

The level of 25(OH)D required for maximum suppression of parathyroid levels is also an indicator of vitamin D requirement. Chronic elevations of serum PTH increase osteoclast (bone cell breakdown) activity, negatively affecting bone density. Besides low vitamin D levels, low dietary calcium, skeletal muscle wasting, primary or secondary hyperthyroidism, and chronic kidney disease can all be independent contributors to high serum PTH concentrations.²⁷ The level of 25(OH)D that maximally suppresses parathyroid hormone blood levels is somewhere around 32 ng/mL for adults.^{28,29} A meta-analysis of available clinical trials indicates that vitamin D supplementation of 1000 IU per day can best suppress serum PTH levels.²⁷

While many studies suggest extraskeletal benefits, overall the evidence does not strongly support the use of supplementation with vitamin D to address the myriad of diseases that have been linked to low serum 25(OH)D levels.³⁰ At the same time, a systematic review of studies showed that supplementation using vitamin D₃ alone (but not D₂) reduced all-cause mortality by 11 percent.³¹ Being deficient in vitamin D is not good for one’s health, but in the medical community the jury is out on whether levels above those needed for bone health offer clear benefits.

MISSING PIECES OF THE PUZZLE

Any student who has taken an introductory nutrition course learned that the fat-soluble vitamins, and especially vitamins A and D, can produce toxicity at high levels of intakes. The IOM has set the Tolerable Upper Intake Level for vitamin D at 4,000 IU per day for adults,⁵ identical to the amount the Geriatric Society generally recommends to support seniors’ bone and muscle strength.⁸ The Vitamin D Council states that toxicity is highly unlikely until intakes are above 10,000 IU per day for several months.³² Why do the expert opinions vary, and what risks might there be for higher-dose vitamin D supplementation?

Becoming acutely toxic from vitamin D is thought to be extremely difficult, identified by a marked elevation of 25(OH)D levels (> 150 ng/mL) in conjunction with elevated blood calcium and high normal or elevated serum phosphorus, and clinically accompanied by symptoms such as constipation, confusion, fatigue, and increased thirst and urination.³³ When levels exceed 600 ng/mL symptoms progress to pain, anorexia, fever, chills, vomiting and weight loss, requiring complete avoidance of sun exposure

SERUM (BLOOD) 25(OH)D TEST RESULTS

Organization & Recommendation	< 20 ng/mL	≥ 20 ng/mL < 30 ng/mL	≥ 30 ng/mL < 40 ng/mL	≥ 40 ng/mL < 50 ng/mL	> 50 ng/mL	Considered Ideal
Institute of Medicine	Deficient	SUFFICIENT			Toxicity Possible	
Endocrine Society	Deficient	Insufficient	SUFFICIENT			40-60
Vitamin D Council	Deficient	Deficient	Deficient	Insufficient	SUFFICIENT	50-80

and many months to resolve.³⁴ With chronic vitamin D excess, levels above 50-60 ng/mL rarely raise blood calcium, yet an early indicator is a substantially increased risk for kidney stones, and over time heart disease risk also increases.³⁵ In animal models bone loss and blood vessel calcification or “hardening” are the key pathologies. Toxicity is heightened by a rich dietary supply of calcium and phosphorus, so removal of dietary calcium is important. Conversely, toxicity is reduced by high intakes of vitamin A.³⁶ Moderate sun exposure is much less likely to lead to toxicity because excess vitamin D₃ is photodegraded into products that

have no calcemic activity.³⁷ On the other hand, excessive sun exposure has been linked to a twenty-fold increase in kidney stones.³⁸

Dr. Price’s detailed observations give us solid clues as to why the results of modern-day studies do not support the practice of supplementation of high doses of vitamin D alone. The trio of fat-soluble vitamins A, D and K₂ (Price’s x-factor) are best derived from nourishing foods where they occur in natural balance, along with sensible sun exposure. The dietary wisdom of native peoples far surpasses that of modern medicine. Most doctors, dietitians and nutritionists are unfortunately still unaware that vitamins A, D and K₂ work together to produce and activate proteins that direct calcium to the bones and away from soft tissues, one of their many vital and varied roles in the body.

Additional clues surfaced around the middle of the 20th century when researchers demonstrated that vitamin A and vitamin D when adminis-

VITAMIN D DAILY INTAKE GUIDELINES

INSTITUTE OF MEDICINE: Recommended Dietary Allowance^{1,2,3}

(meets needs of 97.5% population, assumes minimal or no sun exposure)

Adult 600 – 800 IU (age-dependent); Tolerable Upper Intake Level: 4,000 IU

Child 400 – 600 IU (age-dependent); Tolerable Upper Intake Level: 1,000 – 4,000 IU

The 4,000 Upper Level still includes a large safety margin, at least based on acute toxicity symptoms of hypercalcemia.⁴ Based on IOM guidelines, the CDC estimates 8 percent of Americans are deficient in vitamin D, and another 24 percent have inadequate vitamin D levels.²

ENDOCRINE SOCIETY: Daily dose (minimum) needed to raise above baseline of 30 ng/mL⁵

Adult 1,500-2,000 IU

Child 1,000 IU

AMERICAN GERIATRIC SOCIETY⁶

Adult at least 1,000 IU, majority of older adults require 4,000 IU (diet and oral)

NATIONAL OSTEOPOROSIS FOUNDATION⁷

Adult 18-49 years 400-800 IU

Adult 50 years and older 800-1,000 IU

VITAMIN D COUNCIL: Daily dose needed to raise from 25 to 50 ng/mL⁸

Adult (150 lbs.) 3,700 IU

Toxicity possible if taking more than 10,000 IU per day for 3 months or longer.

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2. In 2011, the IOM updated their vitamin D guidelines based on “nearly 1,000 published studies as well as testimony from scientists and stakeholders.” Noting the existence of many studies on vitamin D’s benefits, “such as protection against cancer, heart disease, autoimmune diseases, and diabetes,” they judged that only the evidence on bone health was strong enough to base vitamin D recommendations on. <http://www.livescience.com/42481-vitamin-d-supplement-facts.html>
3. Due to “emerging concerns about elevated 25(OH)D, the IOM has shifted the paradigm from thinking about ‘more is better’ to a more risk-averse approach. Because adverse effects of vitamin D supplementation may take decades to be realized, clinicians (mindful of the medical ethics precept ‘First, do no harm’) should err on the side of caution; follow the IOM guideline and wait for the results of long-term vitamin D studies.” Mangin M, Sinha R, Fincher K. Inflammation and vitamin D: the infection connection. *Inflamm Res.* 2014; 63(10): 803–819.
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ARE VITAMIN D TESTS RELIABLE?

Can we be confident that our 25(OH)D test results represent what is going on in the body?

In this article we have made a broad assumption, namely that we can and should rely on the 25(OH)D blood test to accurately reflect the body's level of circulating vitamin D, then use this to make a personal or clinical decision on how much vitamin D to supplement, or whether to increase the consumption of vitamin-D rich foods or time spent in the sun. In many cases, this assumption is likely a good one. However, exceptions have been found in individuals who have obesity, certain genetic variations, and/or acute or chronic inflammatory disease, raising questions on the broad applicability of the 25(OH)D test. In addition, some of the laboratory protocols used to test vitamin D have inherent limitations.

The blood test for 25(OH)D measures only the hydroxylated forms of vitamin D₃ and D₂ that circulate in the bloodstream. While considered the best test for vitamin D, is it a reliable indicator of whole body vitamin D status? Unfortunately, not always. It does not measure the amount of vitamin D itself (in the non-hydroxylated form) that is stored in the body fat, which for some people may be considerable. Obese persons have lower blood levels of vitamin D, yet at the same time can have considerable quantities stored in their body fat. For example, one study found after taking a supplement of 20,000 IU of vitamin D₃ once per week for 3-5 years, serum 25(OH)D was 39.6 ng/mL versus 24.8 ng/mL in the placebo group, but abdominal fat contained 209 ng/g of vitamin D₃ versus 32 ng/g in placebo group. Assuming that the 209 ng/g concentration was the same in all body fat, the supplemented group had an average of 264,000 IU stored vitamin D in their bodies.⁴⁴ Whether this presents a problem is unknown, but there is the potential for stored vitamin D to be released during even modest weight loss.²²

GENETIC VARIATION

Serum 25(OH)D levels are influenced by a number of genes that govern the vitamin D binding and receptor proteins and the enzymes that hydroxylate vitamin D. Increases in serum 25(OH)D with vitamin D supplementation vary according to common differences (polymorphisms) in these genes, with potential implications for vitamin D-related health outcomes.⁴⁵ The differences in 25(OH)D levels attributed to polymorphisms has been estimated to range from 23 to 77 percent, rivaling differences due to sun avoidance, and may be related to the season of the year.⁴⁶ This is an emerging area of research, but it appears that in those affected, serum 25(OH)D may actually “overestimate” actual vitamin D intakes from food or sunlight.¹⁰

INFLAMMATION AND INFECTION

Multiple observational studies have reported a correlation of vitamin D deficiency with inflammation and inflammatory diseases, however cause and effect has yet to be conclusively demonstrated for the majority of these relationships. For example, a review of several clinical trials of vitamin D supplementation with overweight or obese individuals found no overall improvement in inflammatory markers.⁴⁷ Evidence has emerged to suggest another hypothesis—that low 25(OH)D is a result of the chronic disease process, provoked by a chronic bacterial infection.⁴⁸

LABORATORY TEST VARIABILITY

Between different laboratories, substantial variations in results for serum 25(OH)D have been reported.⁴⁹ The Office of Dietary Supplements of the National Institutes of Health has instituted the Vitamin D Standardization Program (VDSP), a collaborative venture of several governmental and non-governmental organizations, to address this problem.⁵⁰ It has been suggested that the preferred assay is mass spectrometry for a number of reasons, but costs and high levels of expertise required are barriers to its availability. In the future, the CDC plans to post on their website a list of laboratories that meet the VDSP certification standards.

INTERFERING COMPOUNDS

Many of the commonly available 25(OH)D laboratory tests are unable to distinguish true 25(OH)D from related forms called epimers and isobars. In some individuals, especially those with autoimmune diseases, there can be relatively high amounts of these forms leading to a high degree of uncertainty on what is actually being measured by the blood test.⁵¹

tered together were substantially more effective at protecting against infections like colds than when given alone,³⁹ and that even very high doses of both over a course of three years did not result in toxic effects when administered together. Furthermore, even modest amounts of vitamin D have been shown to deplete vitamin A, whether provided by sunlight or injection.⁴⁰

In a 2006 paper published in *Medical Hypothesis*,⁴¹ Chris Masterjohn, PhD, explains how it is likely that vitamin D will exert toxic effects when vitamin K and vitamin A are in short supply. It is known that higher intakes of vitamin D lead to “hypervitaminosis D,” causing lethargy, growth retardation, bone resorption and soft tissue calcification, as observed in animal studies. While elevated levels of blood calcium are considered the hallmark cause of the toxic effects of too much vitamin D,⁴² Masterjohn points out that these adverse effects can occur in the absence of elevated blood calcium. He proposes that vitamin D’s toxic effect is primarily the result of higher levels leading to a deficiency of vitamin K and postulates that patients can be given higher doses of vitamin D, potentially offering greater therapeutic value, by administering vitamins A, D and K simultaneously.⁴¹ It is hoped that future studies will evaluate their interactions, in order to better treat patients, and support public health efforts, as recently proposed by the Weston A. Price Foundation to the National Institutes of Health⁴³ as the agency considers the Strategic Nutrition Research Agenda.

As stated before, more up-to-date practitioners are now giving patients vitamin K₂ along with vitamin D, and several supplement manufacturers have developed formulations that combine both D and K₂, but no A. One company, Allergy Research Corporation, does make a supplement containing vitamins A, D and K₂. Time-tested cod liver oil containing natural vitamins along with nourishing traditional foods is still ideal, due to the known presence of other naturally-occurring nutrients, along with those that we have yet to understand.

MANAGING VITAMIN D

Do we need to closely manage serum 25(OH)D levels? How should we supplement

if we don’t test? As stated earlier, ordering vitamin D blood testing has become fairly routine. In my experience, follow-up testing may also be done after vitamin D supplementation is prescribed. But are these tests needed, and if so, how often?

I am actually in favor of doing baseline vitamin D testing for many patients in an effort to confirm suspicions that they could be grossly deficient in vitamin D; or conversely, taking too much supplemental vitamin D, which is not uncommon. After a moderate course of supplementation with 1,000-2,000 IU per day, or the complete discontinuance of vitamin D in some cases, retesting after six to twelve months may determine whether the patient is on target, with blood levels of 25(OH)D somewhere between 30 and 50 ng/ml, lower in winter, higher in summer. Tests are not without limitations (see sidebar, page 36)—if we supplement too aggressively we may “overshoot” ideal levels of vitamin D or unknowingly cause adipose stores to rise to excessive levels. As we have seen, blood levels may not necessarily reflect the body’s total vitamin D stores or status.

Dr. Alan Gaby, author of “Nutritional Medicine”⁵² warns that the safety and efficacy of long term vitamin D supplementation with more than 2,000 IU per day for the purpose of achieving a target 25(OH)D level has not been established. Dr. Pamela Lutsey, lead researcher for a recent study on vitamin D supplementation, concurs that higher intakes can be dangerous leading to the overabsorption of calcium and subsequent deposition in soft tissue such as the heart and kidneys.^{3,4} In the shorter term, amounts over 2,000 appear to be reasonable. If a practitioner decides to forgo vitamin D testing, a safe and effective daily dose of vitamin D is likely between 800 and 1,200 IU. Individuals who are supplementing on their own are cautioned not to exceed that, especially if sun exposure is habitual or if fortified foods are consumed.

These approaches represent a medicalized approach to nutrient sufficiency, applicable in some cases. However, a more safe, effective and sustainable approach would be one that considers the full trio of fat-soluble vitamins and how they work synergistically together, both to support each other’s functions and protect from the risk of toxicity. Eating an array of delicious, nourishing foods that lead to a natural balance of vitamin D with its partners, vitamins A and K₂, and getting outdoors on a regular basis are good for our mental and physical health. Our diets should include a range of pastured animal foods and wild seafoods: egg yolks, butter and cheese, organ meats, whole fish and shellfish, and animal fats such as lard; like us, animals obtain vitamin D from the sun and store it in their bodies and in their fat. The addition of a high-vitamin cod liver oil is highly recommended too. This will remove the need for repeated vitamin D testing and eliminate all worry of potential toxicity from too much vitamin D. By following the wisdom of our ancestors, our quest for optimal health can be risk-free. ☯

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The Five “Obstacles to Cure”: How to Address the Most Common Challenges to Optimal Health

By Louisa L. Williams, MS, DC, ND

If you never stop searching for what is truly authentic and real in your life, at some point you will arrive at the truth. It may feel like an uphill battle at times—and it is never, *ever* a simple and straight course—but if you persevere, you eventually will reach a level of understanding that can be defined as wisdom.

The same thing can occur in clinical practice. In over thirty years in practice as a holistic physician, I have tested many techniques and diagnostic assessments, separating out what is really important and worthwhile from what is not. I have thrown away thousands of supplements and remedies that did not hold up clinically and energetically on patients. Through this process, I have identified methods and treatments that have stood the test of time and are the most effective and curative for my patients. In this article, I cover the five most significant obstacles to achieving optimal health—heavy metals, toxic chemicals, toxic foods, toxic microbes and miasmatic tendencies—and describe how to address them most effectively.

By concentrating on what we *can* control, that is, what we allow directly into our bodies and home environments, we can achieve a more optimal level of health over time.

WHAT ARE “OBSTACLES TO CURE?”

The brilliant Dr. Samuel Hahnemann (1755–1843), who was conversant in at least eleven languages and at the youthful age of twelve was tutoring other children in Greek and Latin, founded the field of homeopathic medicine in 1789.¹ Hahnemann coined the term “obstacles to cure” after witnessing many of the conventional medical treatments of his day making patients worse instead of better.

Allopathic treatments are antagonistic and suppressive to disease symptoms. In Hahnemann's time, the most notorious of these allopathic remedies was mercury in the form of van Swieten's liquor (mercuric chloride) and calomel (mercurous chloride). Practitioners in that era extensively used these “universal antiseptic” powders, ointments and injectables to calm teething babies; treat syphilis, gonorrhea, and various skin diseases; dress bandages; spray in operating rooms; and serve as a household cleaning ingredient.² Although research since has confirmed the extreme toxicity of these products, the mainstream medical establishment of the 1700s and 1800s did not tolerate attempts to speak out against their toxicity, and widely criticized Hahnemann as well as other holistic physicians of the time for their perceived heresy.²

Sadly, conventional allopathic medicine and the pharmaceutical companies that support it still reign supreme. Modern medicine and dentistry continue to use mercury in the form of thimerosal-containing flu and other vaccines and mercury amalgam fillings. Further, the number of other xenobiotics (substances foreign to the body) skyrocketed in the twentieth-century era of “better living through chemistry,” exposing us to numerous adverse effects. Nonetheless, by concentrating on what we *can* control—that is, what we allow directly into our bodies and home environments—we can achieve a more optimal level of health over time.

REMOVE TOXIC METALS

The placement of the most toxic non-radioactive metal on earth in the mouths of children and adults sounds almost ludicrous in the face of modern scientific research, which has clearly correlated mercury with hundreds of

serious illnesses and diseases. Yet the American Dental Association (ADA)—a trade association representing the interests of conventional dentists—still condones the practice of utilizing “silver” amalgam fillings containing over 50 percent mercury.

Recent Canadian research from the University of Calgary dramatically refutes the ADA's archaic stance by scientifically demonstrating that the mercury in amalgam fillings leaches continuously to the brain, creating the identical neurofibrillary tangles and amyloid plaques seen in Alzheimer's and other forms of dementia.³ Surprisingly, testing found that other toxic metals (including aluminum, lead, cadmium and manganese) did not cause these distinct neurological lesions. Boyd Haley, PhD, emeritus professor and department of chemistry chair at the University of Kentucky, has concluded that “Mercury is a primary causative factor in the onset of Alzheimer's.”³ Articles in peer-reviewed scientific journals have found clear evidence incontrovertibly linking this dangerous neurotoxin to other neurological diseases as well, including Parkinson's disease, multiple sclerosis (MS), and amyotrophic lateral sclerosis (ALS).⁴⁻⁷

Because of mercury's very clear and compelling correlation with neurological disease, not to mention hundreds of research articles linking mercury toxicity with a multitude of other conditions (including arthritis, anxiety, depression, heart disease and cancer), it is my recommendation that everyone consider having their amalgam fillings removed. This recommendation comes with three major caveats, however. First, individuals should only undergo this dental revision procedure when they are healthy enough to excrete the heavy metal from their bodies efficiently. Second, they should identify a well-trained biological dentist skilled and experienced with removal of amalgam fillings. Third, individuals should effectively detoxify before, during and after removal.

My heavy metal detoxification protocol, *The 5 Dental Detox Days*,⁸ is based on research showing a statistically significant increase in mercury excretion just after the removal of mercury.⁹ My clinical observations confirm that well prepared patients respond very well to amalgam removal when they strongly address

the acute inflammation from dental drilling by significantly augmenting detoxification during and immediately after removal. This “hitting fire with fire” protocol on the day of drilling and for four days afterwards (and then on a reduced regular protocol for the next three to six months) consists of taking acute homeopathic remedies several times a day, doubling or tripling the dosage of detoxifying nutritional supplements and carefully adhering to a nutrient-dense Wise Traditions diet. Other important topics covered in my five-day protocol include dental galvanism (abnormal electrical currents caused by mixed metals in the mouth), carcinogenic nickel often found in porcelain-fused-to-metal (PFM) crowns, the allergenicity of gold crowns, and the pros and cons of heavy metal tests.⁸ I also include a list of relatively inert and nontoxic dental materials and a listing of holistic dental organizations.⁸

REMOVE TOXIC CHEMICALS

No one needs reminding of the vast number of pesticides, insecticides, herbicides and other toxic chemicals that contaminate our food, water, air and soil. It is important to remember that these xenobiotics are very new to civilization and are primarily an outcome of the most toxic period ever known to humankind—the twentieth century. For example, from 1940 to 2000, eighty-seven thousand new chemicals were synthesized in the U.S. alone.¹⁰ This alarming trend has continued, with new chemicals invented at a rate of at least two thousand per year.¹⁰

The statistics on pesticides are especially dramatic. In 1950, less than 10 percent of cornfields were sprayed with pesticides; by 1993, 99 percent were chemically treated.¹¹ In 1929, the Swann Chemical Company (which later became part of Monsanto) first manufactured polychlorinated biphenyls (PCBs). Although Congress banned the manufacture and use of most PCBs in 1976, these neurotoxic and carcinogenic chemicals are still found all over the globe, even in the remote and once-pristine Arctic.¹²

More recently, Dr. Stephanie Seneff has exposed the widespread toxic influence of glyphosate, the active ingredient in Roundup, which is the most popular herbicide in the world. Glyphosate residues are found in all the major

foods of the Western diet, including sugar, corn, soy and wheat. Glyphosate inhibits cytochrome P450 enzymes, our liver’s most crucial detoxification system.¹³ This toxic chemical also impairs the sulfate transport system and interferes with the production of healthy gut bacteria. Dr. Seneff has found that the consequences of these and other disruptions to our body chemistry and natural detoxification systems are at the root of many diseases associated with a conventional Western diet, including obesity, diabetes, heart disease, cancer and Alzheimer’s.¹³

The tragic repercussions of this profits-before-people economic model—a model that was and still remains the norm—are that no one is free from a significant body burden of these pervasive toxic chemicals. Extensive research in both the U.S. and Canada has revealed that everyone (whether fetus or senior citizen) carries a load of between one hundred and two hundred of these xenobiotics.¹⁴ As the authors of one report concluded, “Toxic chemicals contaminate people no matter where they live, how old they are, or what they do for a living.”¹⁵ The results of these studies are sobering and can feel rather overwhelming and depressing. However, as more and more individuals have become aware of the pervasive toxicity in our environment, organizations like the Weston A. Price Foundation and other environmentally responsible groups are encouraging and making changes.

At a personal and household level, we can reduce our body burden of toxic chemicals significantly through dietary changes (covered in the next section) as well as in our choice of household cleaners, soaps and personal care items. In fact, our home is the one environment over which we can exert significant control. One of the most consequential steps we can take is replacing toxic soaps and cosmetics with nontoxic alternatives. The great Rachel Carson once commented on “the harmless aspect of the familiar,” which characterized not only the widespread usage of the DDT insecticide in the 1950s but the current ubiquitous use of conventional cosmetics and soaps.¹⁶ The repetitive and seemingly harmless application of mascara, shampoo, shaving cream and nail polish can feel so familiar and “normal” that the thought that

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Cost-saving
and lifestyle
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Traditions
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time, more
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and projects,
more restful
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anxiety,
depression and
other mood
disorders.

these everyday products might be harmful—and even carcinogenic—at first can seem absurd to most people.

Research has clearly proven otherwise, however. Important studies conducted in Scotland and Seattle found that the common cosmetic ingredient paraben (in the form of methylparaben, propylparaben or butylparaben) was a significant contributor to breast cancer. Further, these studies conclusively proved that the parabens found “in vivo”—that is, in the actual cancerous breast tumors—originated from personal care products such as deodorants, creams and cosmetics.^{17,18} Other studies, many conducted by the excellent Environmental Working Group (EWG), have produced similar findings. The noted environmental medical physician Sherry Rogers cautions that dermal application of these products “is just like *eating them*, for they reach the bloodstream as though they had been eaten.”¹⁹ In short, the research evidence is now quite undeniable that many of the chemicals added to conventional soaps and cosmetics are clearly carcinogenic and also cause many other damaging symptoms, including asthma, allergies, infertility, dizziness, inability to concentrate, mood changes, depression and memory loss.²⁰

Thankfully there is an easy solution to this problem, which is to replace your regular products with nontoxic alternatives. It is a giant leap in the right direction to shop for laundry detergents, chlorine-free toilet paper, soaps and cosmetics at health food stores instead of drugstores, grocery stores or department stores. However, even health food stores may carry cosmetics containing toxic chemicals. Further, the label does not always include all the ingredients used in these products.

The Environmental Working Group’s Skin Deep list, which has reviewed hundreds of cosmetics and other personal care products, is an excellent resource to consult before purchasing such products.²¹ Additionally, I have maintained a list for over twenty years that contains my recommendations for the best nontoxic cosmetic and hygiene products currently available.²² This “Best Bets” list includes the cleanest and most nontoxic products that not only test well on patients, both clinically and energetically, but also

perform best on skin and hair and are therefore most popular among holistically-oriented individuals. This will hopefully save you money spent on various shampoos that make your hair look like straw!

If you have a toxic chemical history, it is best to follow the guidelines in my *5 Dental Detox Days* protocol⁸ by doubling or tripling your vitamins, minerals and antioxidants for at least five days—and preferably for two weeks or longer—to lessen the withdrawal effects from these xenobiotics. Individuals with a toxic chemical history may include artists, farmers, hairstylists, dentists, dental assistants, lab techs, conventional doctors, nurses, printers, firefighters, factory workers and painters—as well as anyone else who has been exposed to toxic chemicals for significant periods of time.

REMOVE TOXIC FOODS

Many *Wise Traditions* readers have probably already addressed the obstacle of toxic foods. As those eating a Wise Traditions diet know, the best way to remove an addiction is to replace it with a more pleasurable alternative. In the case of food, nothing is more delicious than a nutrient-dense, high-fat, moderate-protein and properly prepared-carbohydrate diet. Over time, the Wise Traditions diet allows us to detox and heal so substantially that the thought of indulging in refined and sugary junk foods becomes a distant and even unpleasant memory.

The benefits of avoiding toxic foods, including foods containing genetically modified (GMO) ingredients, are numerous. GMO foods are carcinogenic and contain glyphosate. As described in the previous section, toxic glyphosate spells double trouble for the gut by disrupting the metabolism of sulfur (which feeds healthy bacteria) and allowing pathogenic bacteria to proliferate.¹³ By definition, certified organic foods cannot be genetically modified, nor are they laden with pesticides, herbicides, insecticides and the thousands of other chemicals already mentioned.

The second most prevalent herbicide polluting our water, soil and foods is atrazine, banned in Europe in 2005. Atrazine disrupts hormones and has been linked to birth defects and several types of cancer.²³ In light of the frightening

statistics on toxic chemicals such as glyphosate and atrazine, many families have concluded that they must make organic foods a priority.

Individuals eating a Wise Traditions diet often experience first-hand many tangible cost-saving and lifestyle benefits. These include reduced sick time, more energy to complete tasks and projects, more restful sleep and less anxiety, depression and other mood disorders. After one month of establishing the Wise Traditions diet in my own life, I went from taking ten or twelve vitamins a day to only three or four—resulting in a definite savings in the cost of supplements!

As with household and personal care products, replacement is an easier strategy than avoidance. By replacing toxic fats such as canola and other vegetable oils with delicious grass-fed butter, ghee, coconut oil and red palm oil, you can substantially reduce chronic inflammation in your body. In fact, it is especially important for those new to the Wise Traditions diet not to hesitate about adding more good fats to their meals. Primitive diets contained at least ten times the amount of important fat-soluble A, D, E and K vitamins as the modern American diet. Dr. Price found that traditional cultures were not only exceedingly healthy, but the vast majority had no cavities and had room for all thirty-two teeth. Further, depression and anxiety were rare; Dr. Price observed a cheerful outlook in most of the cultures that he visited.²⁴

Another delicious part of the Wise Traditions diet is incorporating fat with meat. Traditional peoples never ate skinless, boneless chicken! They intuitively realized the importance of not discarding but enjoying nutrient-dense organ meats, skin and eating meat *au jus* or with gravy; most importantly, they ate the fat so that the naturally occurring fat-soluble vitamins could support full assimilation of the proteins and minerals in the meat.²⁵

We should further replicate traditional people's nutrient-dense diets by avoiding foods produced using modern-day toxic farming and fishing practices. Instead, eat grass-fed meats; wild-caught salmon, roe, sardines and herring; pasture-raised soy-free eggs; and non-pasteurized raw cheese, butter, cream and milk.

The Wise Traditions diet also emphasizes the importance of mitigating the phytotoxins

found in vegetables, nuts, grains and seeds. The human body requires a certain amount of daily carbohydrates—but only properly prepared ones. Green vegetables such as kale, spinach, mustard greens, Swiss chard, cabbage and collard greens need to be well-cooked (or fermented, in the case of cabbage) in order to reduce their oxalic acid content, a compound that has been linked to cancer, diabetes, kidney stones and thyroid dysfunction.²⁶ The traditional Gullah Geechee people who still inhabit the coastal areas of South Carolina and Georgia have known this for centuries. They pour hot water over collards and other “tough greens” before cooking them with bacon (Caroline O’Quinn, personal communication).

Where beans, grains, nuts and seeds are concerned, every member of the Weston A. Price Foundation knows that these should be soaked in slightly acidic lukewarm water for hours and then rinsed to remove the majority of protease inhibitors and other antinutrients that retard full assimilation and further inflame the body.

It is also important to avoid “enriched” grains. The vitamins and minerals with which grain products are enriched are synthetically derived from pharmaceutical labs and then sprayed onto flour and grains, typically derived from GMO sources in China.²⁷ Even grocery store chains such as Whole Foods carry breads, pizza dough and pastries made from enriched grains, so be sure to read labels thoroughly to avoid these toxic carbohydrates.

Desserts should come from organic fruits combined with delicious fats such as raw cheese, raw cream, raw butter or coconut cream, as well as soaked and dehydrated nuts. Use small amounts of raw honey, organic maple syrup and sugars made from organic cane and coconut for less frequent treats.

If you have not yet reached level of health where gut dysbiosis and intestinal permeability (“leaky gut”) are things of the past, you must avoid your primary food allergens. The most common allergies are dairy and gluten, with eggs, corn, chocolate, peanuts, shellfish, citrus and soy being close seconds. To determine which allergy or allergies are primary, do the gold standard—and absolutely free—test

By replacing toxic fats such as canola and other vegetable oils with delicious grass-fed butter, ghee, coconut oil and red palm oil, you can substantially reduce chronic inflammation in your body.

described on my website, the “Elimination Challenge Protocol.”²⁸ This involves completely avoiding the first allergy food you suspect for a full two weeks and then eating it one day. A return of your symptoms during that day or the three following days represents a positive test and indicates that you should avoid this food for a few months or even longer. This will give the body a break from the inflammatory cycle that food allergies continually generate, and allow your gut and immune system to heal more fully.

When you are ready to try one of these allergy foods again after a period of avoidance and healing, first challenge the healthiest foods in your primary allergy group.

For example, if you are dairy-allergic, first eat organic raw cheese or milk or grass-fed butter. If you are gluten-allergic, try introducing properly prepared (soaked, dehydrated and then freshly ground) spelt, kamut or einkorn bread or muffins.

I also recommend eating primary allergenic foods intermittently, in what I refer to as a “Variety and Rotation” (V&R) fashion. The V&R method means that you vary your allergenic foods as much as possible (for example, alternating spelt and

kamut grains) and rotate them so that you do not eat the same food day after day. (For example, you might eat cottage cheese on Mondays and Thursdays, and yogurt on Tuesdays and Saturdays.)

REMOVE TOXIC MICROBES

An important way to reduce pathogenic bugs in the body is to adopt a Wise Traditions diet and avoid your primary food allergy or allergies, as just discussed. Another less well-known way to reduce the toxic pathogenic load is to treat your chronic or dominant focal infections. “Dominant focal infection” is not a well-known term, even to many holistically oriented individuals in this country. In my book *Radical Medicine*, I define a dominant focus as “a relatively silent and locally asymptomatic area of chronic irritation, inflammation, and infection, which typically causes intermittent pain and dysfunction in distal and seemingly unrelated areas in the body referred to as disturbed fields.”²⁰ The figure below illustrates a common dental focus, showing the serious but often insidiously silent state of a chronic focal infection.

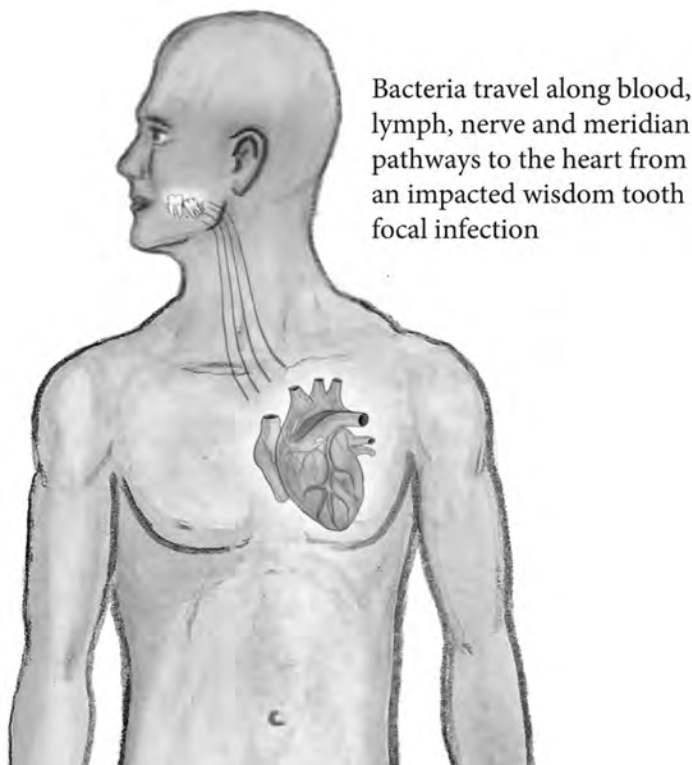
Due to an inadequate diet as infants and children, many of us do not develop the appropriate jaw and cranial size to hold all thirty-two teeth. As a result, impacted wisdom teeth (third molar teeth) are quite common. Wisdom teeth are defined as “impacted” when they cannot break through the gums, or only partially break through, because there is not enough room in the mouth. These impacted and abnormally positioned teeth generate inflammation and

attract bacteria when they begin to develop between ages twelve and fourteen and then attempt to erupt during the “age of wisdom” between ages seventeen and twenty-five.²⁰ Nine out of ten people nowadays have at least one impacted wisdom tooth.²⁹

Impacted wisdom teeth are often the site of chronic focal infections. The problem is that while unerupted teeth may rarely cause symptoms, the pathogenic bacteria generated in these sites—typically streptococcal—can travel to dis-

turbed fields. These bacteria-laden “disturbed fields” may include the heart (rheumatic fever and mitral valve prolapse), joints (rheumatoid arthritis), kidneys (glomerulonephritis and chronic kidney and bladder dysfunction) and brain (memory loss and obsessive-compulsive disorder symptoms).²⁰

Doctors who do not perform a thorough physical exam (which should include the teeth) and who are unfamiliar with focal infections typically only treat the symptoms. Thus, they may prescribe nonsteroidal anti-inflammatory drugs for arthritis or medications for cardiac arrhythmias while missing the true cause of the patient’s condition or disease. Weston A. Price was a leader in the field of dental focal infections. Leading a team of sixty notable



scientists, including Charles Mayo, Dr. Price declared that “Modern medicine is mistaking effect for cause.”²⁰

Other common focal infections may involve the tonsils and sinuses. These foci become even more well-established when children receive excessive rounds of antibiotics for colds, ear and sinus infections and strep throat. These interventions actually increase the likelihood of struggling in adulthood with various dysfunctions and diseases emanating from insidiously silent chronic upper respiratory focal infections. Antibiotics kill the weaker bacteria but tend to encourage stronger bacteria to adapt and survive by hiding or mutating.

Bacteria’s most common mutation strategy is to lose their cell wall over successive generations which renders them virtually unrecognizable by future antibiotics—as well as our own immune systems.³⁰ These mutated cell wall-defective (CWD) bacteria make up most of the pathogenic microbes found in focal infections in the teeth, tonsils and sinuses and furnish the basis for the future onset of autoimmune disease. Over time, CWD bacteria migrate to other warm, moist, semi-anaerobic and microbe-hospitable areas of the body. These common disturbed fields include the heart valves, the synovial fluid in the joints, the glomerular tubules in the kidneys and the meninges of the brain.

Dr. Martin Fischer, a German-born American professor of physiology and the author of *Death and Dentistry*, comments: “For it is said truly that the disease of man’s mature years are naught but the diseases of childhood, grown old.”³¹ Thus, while the antibiotic-treated tonsillitis and other upper respiratory infections of childhood may no longer occur when we are adults, the pathogenic bacteria remaining in dental, tonsil and sinus focal infections can maintain symptoms such as fatigue, memory loss, kidney or bladder dysfunction, joint pain, and heart disease for a lifetime.

Whereas the causative focus is often silent and asymptomatic, the disturbed fields are not. If you have chronic hip or shoulder pain, fatigue, headaches or frequent urination that are not resolved by conventional medicine, consider consulting a holistic doctor or practitioner or a biological dentist who is knowledgeable and

experienced in diagnosing and treating focal infections. *Radical Medicine* (Chapters 8-13) provides more in-depth information on chronic foci.²⁰ I discuss optimal recovery from dental surgery in *The 5 Post-Cavitation Surgery Days*³² and describe in my book, *CASPERS Syndrome: A Naturopathic Doctor’s Guide to Treating Chronic Autoimmune Stealth Pathogens Evolved from Resistant Bacterial Species*, how overuse and abuse of antibiotics help generate chronic focal infections.³⁰

REMOVE MIASMIC TENDENCIES

Fundamentally, our life is determined not by genetics but by epigenetics; that is, the environment we live in and create for ourselves primarily determines the expression of our genes and our level of health. Following the recommendations in the previous four sections can have an enormous effect on one’s epigenetics, with corresponding effects on the degree and quality of health and happiness. A sizeable percentage of us, however, still suffer from disturbing symptoms even though we adhere to an allergy-free Wise Traditions diet, use clean soaps and cosmetics, have removed our amalgam fillings and have cleared all of our focal infections. This fact—observed in myself and in my patients—motivated me to study homeopathy and the treatment of miasms. The term “miasm” refers to the inherited or environmentally caused predisposition to disease and the susceptibility of succumbing to that disease under stress.²⁰

Unfortunately, there are many modern-day stressors: seventy vaccines from birth to eighteen, ten or more rounds of antibiotics before immune systems have matured at the age of seven, and the innumerable statins and other toxic drugs that characterize the polypharmacy of adulthood.³³ These can render even the sturdiest immune system dysfunctional. Dr. Hahnemann’s observations in the nineteenth century ring even more true today:

Of all the chronic diseases, these botchings of the human condition brought forth by the allopathic calamitous art (at its worst in recent times) are the saddest and most incurable. I

Bacteria’s most common mutation strategy is to lose their cell wall over successive generations which renders them virtually unrecognizable by future antibiotics—as well as our own immune systems.

regret to say that when they have been driven to some height, it seems to be impossible to invent or devise any curative means for them.¹

The theory underlying the field of epigenetics is correct in suggesting that we have an enormous capacity to influence our health positively. However, the exceptionally strong modern-day toxic insults that many of us experience necessitate exceptionally strong and effective treatments. Fortunately, Dr. Hahnemann's teachings, along with more recent contributions from homeopathic physicians in Mumbai, India, provide a means for effecting meaningful change. Homeopathy is based on the "law of simillimum" or "like cures like." For example, the profuse watery eyes and nasal discharges characteristic of hay fever symptoms can be treated with *Allium cepa*, a remedy made from red onions, which causes the same symptoms from the chemicals released when you cut into them. The itching, burning and swelling symptoms characteristic of acute anaphylaxis that are similar to a bee sting can be treated with *Apis mellifica*, the remedy made from honeybee venom.

Acute homeopathy—which prescribes remedies for a recent illness or injury—has been very successful over the last few centuries. For example, *Arnica montana* 30C, available at every health food store, is

excellent after surgery and for treating acute sprains and strains, bruising and head injuries. Homeopathy has even been proven effective for serious acute diseases, such as the 1849 cholera epidemic in Cincinnati, where only 3 percent of the patients treated with homeopathic remedies died, compared to 70 percent of those treated with conventional medicine.^{34,35}

Constitutional homeopathy, on the other hand, involves the use of one remedy intermittently throughout life to reduce one's miasmatic weaknesses and susceptibilities, but it has not always been easy to ascertain the correct remedy. Thankfully, the new Sensation Method from India, originated by Dr. Rajan Sankaran, Dr. Divya Chhabra, and other medical homeopaths practicing in Mumbai, is quite effective in determining one's correct lifetime remedy (described in Chapter 14 of *Radical Medicine*).²⁰ Interestingly, this method developed in the early twenty-first century shares a realization also

TREATMENT USING THE SENSATION METHOD: A CASE REPORT

The powerful effects of this style of homeopathy can be illustrated through a brief synopsis of a recent case, which demonstrates that even patients who have lived for decades with serious illness and are on conventional medications can achieve optimal health through removal of the obstacles to a cure. A fifty-year-old female patient diagnosed with rheumatoid arthritis (RA) and irritable bowel syndrome (IBS) contacted me in late 2016. During our first phone consult, I determined that she probably had a dairy allergy because as a child she had had a history of upper respiratory illnesses treated with antibiotics. I recommended testing this dairy sensitivity using the Elimination Challenge protocol. I also discussed Dr. Price's anthropological research, sent information on adopting the Wise Traditions diet and prescribed an initial gentle dose of my probiotic and enzyme supplements.

At the next phone consult, this woman reported that the results were "pretty amazing"! She had not had a "glimpse" of the IBS and constipation for over a month and reported feeling like she was "coming back to life." Although she very much wanted to wean herself off of Carafate (an anti-ulcer drug), she was afraid to do so because without it she usually would feel nauseous and throw up. We therefore scheduled a homeopathic consultation.

During the homeopathic interview, this patient described her stomach symptoms as "sharp," and explained that they often were accompanied by a "massive headache" with dizziness. She experienced these latter symptoms as "light," "bright," and like "my head's got to pop or explode all of a sudden." When asked about the RA sensations, she described feelings of "tingling," "burning" and "achy weakness" that were similar to "being pinched repeatedly."

Using the Sensation Method, which includes visualizations and other techniques to reach the patient's unconscious level, I determined that her symptoms matched the experience of an electrical shock. Thus, I prescribed *Electricitas* 1M. At the next follow-up, the patient reported that she had been really sick the first day after taking the remedy but fine thereafter. (This "retracing of symptoms"—or in homeopathic parlance, "aggravation"—is not uncommon and is completely appropriate after an initial dose.) The patient also reported having successfully taken herself off Carafate. Whereas in the past she would be sick for days when she tried this, she now "felt great." She stated that she had never wanted to use medicine as a crutch but had been scared to get off of her medications. She also had been on Methotrexate for a period of time as an anti-rheumatic, and had been considering getting the required tuberculosis and cancer tests that would allow her to take Humira for her painful RA symptoms.

Post-homeopathy, the patient reported that she had lost (a desired) eleven pounds, stating "I have never felt better in my life!" Despite having worked with allopaths for years and not having much experience with naturopathic doctors, she declared, "I am now a believer in nothing but holistic medicine!" Follow-ups since then confirm that she continues to be symptom-free.

attained by modern psychospiritual schools of healing (including Somatic Experiencing by Peter Levine, Hameed Ali's Diamond Approach, transpersonal psychology as described by John Welwood and others, and rebirthing and other forms of breath work)—namely, that healing occurs most profoundly at the sensation level. That is, the felt sense of trauma and other negative experiences in life, such as feeling “tight,” “heavy,” “squeezed,” “burned,” “trapped,” “pressured,” and so forth, are stored in our unconscious.

Far from being buried, unconscious feelings express themselves continuously in our lives through physical, mental and emotional symptoms. When individuals are able to feel and experience these deep sensations through quality psychotherapeutic methods, they can achieve very real and positive changes in their lives. Similarly, when a trained homeopath can determine the exact sensations that characterize the state of the individual through a carefully taken case, the homeopath can match and prescribe the correct constitutional homeopathic remedy. Dr. Carl Jung's brilliant comment on this topic is appropriate to the fields of both psychology and homeopathy. Jung stated, “Until you make the unconscious conscious, it will direct your life and you will call it fate [or symptoms].”³⁶

More information about the Sensation Method is available from the New York School of Homeopathy³⁷ and Synergy Homeopathic.³⁸

CONCLUSIONS

I wish I could report that every case is as easy to cure as the homeopathic example on page 46 (sidebar). For many people, however, it is challenging to recover from the modern-day holocaust of toxic agricultural, medical and dental practices. In fact, getting well can sometimes entail years of patience and perseverance, and the courage to take the necessary measures to detoxify and regenerate tissue. However, if you educate yourself about these twentieth-century toxins, you will realize that the research evidence is irrefutable that these five obstacles to cure are at the root of chronic symptoms and ill health. With that understanding, you can draw on resources such as the Weston A. Price Foundation and knowledgeable holistic practitioners

and make a commitment to reverse what has been done to your body. Over time, this becomes easier, and achieving optimal health can become a reality. ☯

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The WAPF office staff were on hand to help celebrate the marriage of Member Services Director Tim Boyd to Tao Yu on March 18, 2017. Pictured from left to right: Agnes Bunagan, Sally Fallon Morell, Tao Yu, Tim Boyd, Kathy Kramer, Celia McGovern and baby Scarlet.

The Adrenal-Heart Connection

By Tom Cowan, MD

In my first book, *Fourfold Path to Healing*,¹ I said that the heart does not pump the blood. At the time, I thought that I was done with being heretical about the heart. If one accepts the premise that the heart is not a pump, however, then many other interesting questions arise. For example, what is the heart doing if it is not a pump? What moves the blood? What causes heart attacks? Most intriguingly, why have people throughout the ages connected the heart with gold and love?

My new book, *Human Heart, Cosmic Heart*,² reviews some of the standard explanations of the heart and then explores whether those make sense. If they do not, then what does make sense and what should we do about it?

DIFFERENT PARADIGMS

Let's start by looking at the conventional explanation of a heart attack. I learned in medical school that there are four major coronary arteries leading to different areas of the heart. Interestingly, Wikipedia says that there are only three, and some cardiology books say there are just two. You would think that we would know for certain how many coronary arteries there are. (Actually, nobody disputes the anatomy—two main coronary arteries that branch—but there is a somewhat semantic debate about whether also to count the ones that branch as main arteries.)

At any rate, the explanation for what we call a “heart attack” goes like this. One or more of our two to four major coronary arteries get blocked with plaque over time, which inhibits the flow of blood through the narrowed artery, usually by about 85 to 90 percent. Once someone has a restriction in the blood flow of over 85 percent, the blood has trouble squeezing through the blockage, meaning that part of the heart downhill from the blockage does not have enough blood flow and oxygen. Without enough fuel, the person first experiences chest pain (which we call angina) and then, if the blood flow diminishes even more, eventually the person will have no blood flow through the blocked area and that part of the heart will die.

On its surface, the whole thing seems extremely clear and well-thought-out. About fifteen years ago, however, I came across an intriguing article written by the son-in-law of a Brazilian cardiologist. The article described the myogenic (arising from the muscle) theory of heart disease, disputing the claim that thrombogenic (clot) formation causes coronary artery disease and results in heart attacks. (To clarify, when I talk about “heart disease,” I am referring to unstable angina—chest pain—proceeding to heart attacks. Valve problems, rhythm problems, and congestive heart failure are separate heart diseases that are not the focus here.)

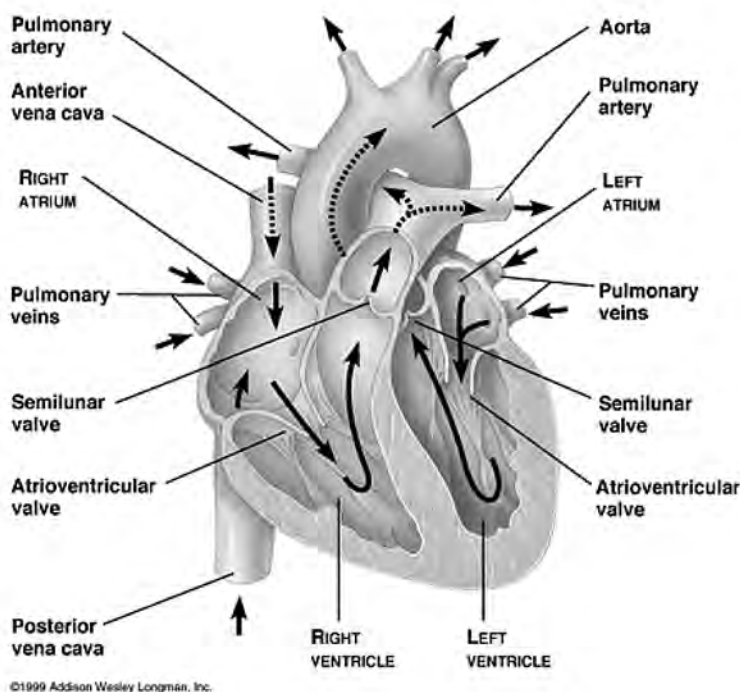
Initially, there was no way I could buy the Brazilian cardiologist's argument. The son-in-law sent me an entire box of books and articles supporting his father-in-law's theory. Although most were in Portuguese, which I could not read, I was very interested and ended up spending several years looking into this other way of thinking about heart disease. I became convinced that he was right and that the usual way of explaining heart disease was wrong.³

Note that we have a trillion-dollar industry based on the conventional theory. All of the bypasses, stents and angioplasties done in this country are based on the theory that says, “You have a blockage in one of your arteries and if you clean the blockage out, you'll be fine.” The coronary artery theory of heart disease also has led to a huge and decades-long dietary debate, particularly about fat. The basis for promoting a lowfat diet for the treatment of heart disease was the idea that the plaque in the arteries was from fat that somehow congealed in the arteries. From that perspective, eating a lowfat diet would either prevent heart disease from hap-

pening in the first place or possibly reverse it if you already had it. Even in alternative medicine, there really were no other explanations put forth about heart disease, other than the debate about whether to eat a high-fat/low-carbohydrate or a lowfat diet. The only other treatment option that anybody suggested was chelation therapy, which is based on the idea that putting chelating agents into the bloodstream would somehow eat up or dissolve plaque.

Everyone agrees that there is something in the blood that is forming

plaque, and they try to reduce that “something in the blood” through diet or statin drugs. Everyone also recognizes that the blood that goes through the coronary arteries is the same kind of blood as the blood that goes through the splenic artery that leads to the spleen or through any other artery. Thus, plaque formation occurs not just in our coronary arteries but also in the splenic artery, the femoral artery, the hepatic artery and so forth. Yet while all of us know someone who has had a heart attack, how many people know someone who has had a “spleen attack?” Nobody. I was an emergency room (ER) doctor for ten years, and I never once saw



anybody with a spleen attack. (A spleen rupture from a gunshot is not a spleen attack.) The question then becomes, if plaque is forming in all the arteries, why doesn't the spleen (or another organ) have attacks, too? There is no anatomic or physiological difference between the splenic and coronary arteries.

CAUSE OR CONSEQUENCE?

Most cardiologists did not believe in the coronary artery theory in the forties and fifties, when heart disease first began making its appearance in this country in a significant way. But sixty years later, they all do. A lot of studies in the earlier medical literature were from autopsies of people who died of heart attacks. A website called heartattacknew.com shares an amazing study by an Italian pathologist named Baroldi who spent forty years doing pathological examinations on people with heart disease.⁴ He found that many people who had been identified as having a non-cardiac disease like asthma had a more than 90 percent blocked artery in one of the major coronary arteries, yet none of them had any signs of heart disease. Thirty-nine percent of people who had been identified by their doctor as being completely normal also had a greater than 90 percent blockage in one of their major coronary arteries. Baroldi found that there was no relationship whatsoever between the size of a heart attack and the severity of the blockage.

Another study in 1986 looked at people with a documented myocardial infarction who had died within twenty-four hours of their heart attack. About 19 percent had a blockage in the coronary artery leading to that part of their heart—but most of the people (81 percent) who died of a heart attack did not have a blockage in the coronary artery leading to the part of the heart that had the heart attack.

Most people who have a heart attack actually live for a week, a month or longer. As far as I can tell from the medical literature, the percentage of people who have a blocked artery leading to the relevant part of the heart varies from a low of about 20 percent if they die right away to about 78 percent if they die some time later. This raises two questions. First, even if it's as high as 78 percent, what happened to the other 22 percent who do not have a blocked artery

but had a heart attack anyway? If you go see a cardiologist and you have clear coronary arteries, the cardiologist will say, "You're fine, you don't need therapy," but we know that at least 22 percent of the people who die of a heart attack do not actually have a blockage in that part of the heart. Second, these studies indicate that the longer you live after a heart attack, the greater the percentage of blockages you're going to get, which raises the question of whether the blockage is a *consequence* of the heart attack and not the cause. If blockages are the consequence of a heart attack, that's a whole different story.

Some years ago, I gave a talk at a holistic heart symposium. The head of cardiology at a large hospital spoke just before me. Speaking for a holistically inclined audience, he knew that he needed to talk about something other than bypasses and stents, so he talked about a study he had been involved in in rural Alabama in the early 1960s. They took poor black men who showed up at the hospital with chest pain and did an angiogram, which involves squirting dye into the coronary arteries and watching to see whether there are blockages. The investigators identified men with severe stenosis (meaning greater than 95 percent blockage) in just one coronary artery and then sent the men home. They wrote a note in the chart predicting that if Joe so-and-so came back some day with a heart attack, it would obviously be in the part of the heart supplied by the blocked artery.

Over the next ten years, some of the men came back with heart attacks and some did not. When they ran the ten-year data, fewer than 10 percent had suffered a heart attack in the area of previously identified blockage. This is a really important finding, because nearly all of the coronary bypasses, angioplasties and stents done in this country today are for people who have stable blockages of over 90 percent. What this and many other studies show is that you are extremely unlikely to have a heart attack because of that blockage.

Consider this scenario. A seventy-five-year old person has noticed in the last three months that he has more shortness of breath or is more tired walking up the hill. He's got a little tension in his chest, so things aren't right. He goes to a cardiologist for evaluation where they do a

Most of the people (81 percent) who died of a heart attack did not have a blockage in the coronary artery leading to the part of the heart that had the heart attack.

The fact that diabetes and smoking are risk factors for heart attacks makes no sense from the perspective of the plaque-major artery theory, but it makes perfect sense from the standpoint of the small blood vessels.

coronary angiogram. They find a vessel that is 97 percent blocked that requires an emergency stent or bypass “or he is going to die.” People come to me with stories like that all the time. (Note that F. Mason Sones, who invented the technique of doing coronary angiography, has said on record that this is not a good way to assess who is at risk for heart attacks or heart disease.)

Let’s dissect this scenario a little bit. First of all, when a cardiologist shows a patient a diagram of the heart, it shows the four major coronary arteries going to the heart. All cardiologists show patients the same diagram of the heart with these four blood vessels. They show the stenosis and say, “It’s 97 percent blocked, you’re only getting 3 percent squeezing through the bottleneck.” They just told this person who’s sitting there looking totally fine that he’s got 3 percent blood flow to one of the major parts of his heart. Think about that. How is he even sitting there? If that’s the only way he gets blood to his heart, how did the patient walk up the hill, albeit with some difficulty? Moreover, the cardiologist says that if another 2 percent gets blocked (so that he is down to 1 percent blood flow), he’s a goner. Is there any meaningful difference between 3 percent and 1 percent? How do you explain the fact that this guy is even alive? When you put all those pieces together, you start thinking that there is something about the conventional explanation that does not make any sense.

NATURE IS SMART

If the conventional explanation does not make sense, what is the answer to the riddle? When you go to the heartattacknew.com website, you will see a picture of a normal heart with the blood vessels. What that picture shows is not just the four major blood vessels but a whole fine cascading network of smaller blood vessels, which are called the collateral circulation. The collateral circulation is in place soon after birth because nature is not so stupid as to put all of her eggs in just three or four baskets. The cascading network is interconnected such that if one part does not work, then another part will. Interestingly, if you take a rabbit and suddenly ligate its coronary artery, it will have a heart attack,

but if you do it more slowly over three to four days, the rabbit will build up enough collateral circulation to not have a heart attack. The body is prepared for contingencies.

Paying attention to the collateral circulation is important because of an interesting anomaly in the theory that plaque causes angina and heart attacks. That anomaly is that some of the risk factors for heart attacks, such as diabetes and smoking, concern the small blood vessels, not the large blood vessels. People with diabetes end up with amputated feet not because they have trouble with their femoral artery but because the small blood vessels in their body are inflamed and stop functioning properly. The same thing goes for smoking. Nicotine is a direct poison of the small blood vessels, which is why you see smokers with broken blood vessels all over their face. The fact that diabetes and smoking are risk factors for heart attacks makes no sense from the perspective of the plaque-major artery theory, but it makes perfect sense from the standpoint of the small blood vessels.

It’s foolish to base a therapy on a theory that does not fit the facts (although insisting on unsubstantiated theories seems to be a national pastime). With regard to heart attacks, there are numerous facts that we have to explain. Why are the brain and heart the only organs to have “attacks?” Why do beta blockers decrease the incidence of heart attacks, when they have no relation to plaque formation and in fact raise your cholesterol and increase your tendency to get diabetes? Why does nitroglycerine help people who are having a heart attack or chest pain? Why do statin drugs give people brain-fog, and why does chronic ingestion of statin drugs cause people to lose on average 3 to 5 percent of their IQ? We have to account for all of these effects.

PARASYMPATHETIC NERVOUS SYSTEM

There is a connection here with stress and the adrenal glands. Adrenaline is the main stress hormone. Having been an ER doctor, I know that if you inject adrenaline into the tissue, it constricts the small blood vessels, which is convenient if you are trying to sew up a wound, because it doesn’t bleed and has no effect on large blood vessels. There is no theory that

connects stress or adrenaline in any way with increased plaque in the major coronary arteries. Yet every study shows that one of the main risk factors for people getting heart disease is severe and chronic emotional, physical or psychological stress. This does not make any sense from the point of view of plaque formation, but again, it makes perfect sense from the perspective of the small blood vessels.

Remember that we have two nervous systems. One is the central nervous system and the other is the unconscious or autonomic nervous system. The autonomic nervous system in turn is divided into two branches, the sympathetic and parasympathetic. The sympathetic (“fight or flight”) branch is centered, chemically speaking, in the adrenal medulla, which is in the center of the adrenal gland. It has cells that make adrenaline and other neurotransmitters. Being in a “flight” situation or experiencing physical, emotional or psychological stress activates your sympathetic nervous system and increases your production of adrenaline. This has a number of biochemical effects, including constricting the small blood vessels and increasing the breakdown of glucose through a process called glycolysis. These effects provide short-term energy that presumably allow you to run away from the bear. The parasympathetic (“rest and digest”) part of the autonomic nervous system is centered in the adrenal cortex, which is the outer region of the adrenal gland. It makes cortisone one of the central neurotransmitters that mediate the function of that part of the nervous system.

Let me point out here that a healthy heart is like the conductor of a band or orchestra.

Imagine you have a drummer in the band. You can’t replace the drummer with a metronome because the music would sound mechanical, but if you have a drummer who can’t keep the beat, that messes everyone up, too. There is flexibility within the beat, and it has to do with the drummer listening and varying the beat almost imperceptibly to keep everyone together. What you need is a strong beat-to-beat variability. The same is true of the heart, and that is called

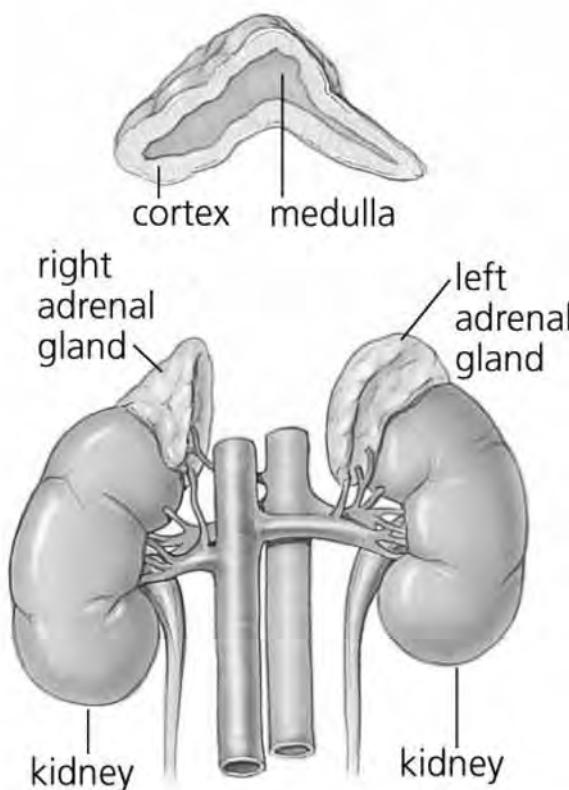
heart rate variability, which we can measure. The heart should not be either a metronome or a drummer who can’t keep a rhythm.

In a sense, this beat-to-beat variability represents the integrity or strength of the parasympathetic nervous system. Whenever you see the heart rate variability decrease either in the direction of becoming more mechanical like a metronome or becoming completely chaotic, it means that the other organs in the body don’t

have a conductor anymore and they go their own way, which is the source of disease. We now know that over 95 percent of people who have a heart attack have decreased heart rate variability in one or the other direction. Some are metronomes, and some have no rhythm whatsoever. Decreased heart rate variability is actually the central event in the evolution of a heart attack and is usually happening for a long time before the patient has any symptoms. High blood pressure, diabetes, chronic stress, nicotine use and everything else linked to heart attacks have all been shown to decrease heart rate variability and parasympathetic tone.

The parasympathetic nervous system has

A healthy heart is like the conductor of a band or orchestra.



a varied menu of neurotransmitters, and these help explain some of the effects of statin drugs, nitroglycerine and beta blockers. One of the neurotransmitters is acetylcholine. It turns out that statin drugs temporarily increase the production of acetylcholine in the parasympathetic nervous system, which may account for the small albeit toxic benefit of statin drugs. Nitrous oxide is another potent neurotransmitter of the parasympathetic nervous system. Nitroglycerine liberates nitrous oxide in the nerve endings. Beta blockers block the sympathetic nervous system and therefore inadvertently increase the parasympathetic nervous system. These major interventions—statins, nitroglycerine and beta blockers—all work by increasing the parasympathetic tone, which may explain their mildly beneficial effect with heart patients. None of these pharmaceuticals reduce plaque formation to any significant degree.

Diabetes, poor diet, smoking, high blood pressure and chronic stress—all the things that account for the majority of heart attacks—decrease the tone in the parasympathetic nervous system. When a sympathetic nervous system stressor comes along—it could be emotional, physical or psychological stress, walking too far, doing too many push-ups or even holding your breath—it can exacerbate pre-existing parasympathetic nervous system imbalances. On the other hand, when human beings have economic security, meaningful work, attractive surroundings, peace on earth, good fats, low carbohydrates, no diabetes, communication, connection with the earth, sunlight, happy sexual encounters and the loving touch of another human being, all of these things help support a fully and optimally functioning parasympathetic nervous system. If you don't have these sources of balance and you are faced with a sympathetic nervous system stressor, you're in trouble. We are meant to have bears chasing us sometimes, but if our parasympathetic nervous system is functioning well, this stress won't cause a heart attack.

GLYCOLYTIC SHIFT

The heart and brain are the two organs with the most mitochondria, using the most energy. Their preferred fuels are fats, particularly fatty

acids. Under a situation of parasympathetic tone decrease and sympathetic tone insult, however, the metabolism shifts from using fats in the mitochondria to using glucose inside the cytoplasm. This mode of energy generation is called glycolysis, otherwise known as fermentation. When you start fermenting sugar for fuel, two things happen. First, it's much less efficient. Second, you start building up lactic acid in the cells. Everyone knows that this happens because if you run farther than you can tolerate, you will build up lactic acid in the cells in your legs, and you will feel a cramp and pain because of the lactic acid build-up.

The same thing happens in your heart and brain, but there is one key difference compared with other organs such as the spleen or liver. Your brain and your heart can never rest, and they have huge energy needs, each using 40 percent of total body energy. Because they can't stop, they keep on with glycolytic fermentation and build up lactic acid in the tissues, which promotes a progressive acidification. By everybody's estimation, this acidification is the final common pathway for necrosis—breakdown or death—of those cells. The pain that we call angina comes first, followed by full-blown destruction of the tissue, called a heart attack.

I said the heart is not a pump, but I didn't say it wasn't a muscle. When there is acidification in the tissue, calcium will be unable to get into the muscle to cause it to contract. When the muscle is unable to contract, you will have an area of your heart that doesn't move. That is the hallmark of heart disease. Once you have an area that is not moving like it should, the blood vessel embedded in that area is under tremendous pressure. If you subject the artery to sheer pressure, you are going to start throwing little pieces of clots off from that artery, even if the artery isn't particularly blocked in the first place. The longer you are in that situation, the more clots will happen. Again, the clots are a consequence of the pressure but not the cause. If you ask cardiologists about this, they have no explanation or ability to predict why this happens, even though it is clear that if you subject the artery to sheer pressure, you're going to start throwing pieces off. In the rare situation where a stent or bypass helps after a heart attack, it is probably because they have cleared out debris that was a consequence, not the cause.

FROM EXPLANATION TO THERAPY

A number of factors are involved in heart disease. Although it is important to get away from simplistic thinking about causation, it is crucial to pay attention to the collateral circulation. If you have poor collateral circulation, that's not good. I'm not saying that having plaque in your arteries is a great thing either, but the main issue is the build-up of lactic acid and the decrease of the parasympathetic tone. That is the central pathophysiology.

Obviously, understanding the role of the parasympathetic nervous system has major implications for the selection of appropriate therapies. The Africa explorer David Livingstone first identified a plant called *Strophanthus* that is native to Madagascar and a few other places. The native Africans dipped their arrows in heavy doses of *Strophanthus* seed extract. Livingstone happened to dip his toothbrush in it, and when he brushed his teeth, his heart rate increased. In Germany for about three

decades it was the principal medicine for the prevention and treatment of heart disease.

The *Strophanthus* plant is a huge vine with seeds. The active chemical in the seed is called g-strophanthin, which we call ouabain in America. It turns out that ouabain is a copy of an endogenous hormone made in the adrenal cortex. It's made from cholesterol by the part of the adrenal gland that controls the parasympathetic nervous system. We know it's endogenous because you can take cholesterol and radioactively tag it, and when you assay for ouabain in the blood six hours later, you will find trace amounts of radioactively tagged ouabain in the circulation.

What does this substance do? It goes to the heart. It has the specific action of converting the lactic acid into pyruvic acid, which is the main fatty acid fuel for the mitochondria in the heart. By converting the lactic acid into the primary fuel for the heart, the whole cycle is broken and the heart can relax. It decreases the oxygen consumption in the heart cells themselves, putting the heart in a relaxed state. What an amazing gift! This plant out in nature supports all the parasympathetic neurotransmitters and even makes the red blood cells more flexible so they can move more easily through the circulation. It also has an anti-platelet effect like aspirin.

The range of dose of g-strophanthin/ouabain depends on what form of *Strophanthus* you use. Right now, there is only one compounding pharmacy in Germany that makes pharmaceutically active g-strophanthin, but you cannot import it. The dose is between three and six milligrams, one to three times a day. The other form is an herbal extract from *Strophanthus* seeds, which I prefer to use because it is made from the whole seed, which is intensely bitter. I have tested the *Strophanthus* extract for ouabain

content and found that it has a known amount of ouabain. The dose of extract varies between two and twenty drops (about 0.2 to 2 milligrams), two to six times a day. (People who think this medicine might help them should find a health practitioner to work with. The health practitioner can call me and I will explain how to use it and where to get it.)

My work with *Strophanthus* does not negate the importance of addressing diet. There is an excellent new documentary called "The Big Fat Fix" by a British cardiologist.⁵ The film traces the history of the diet-heart connection and says you have to eat a certain amount of butter, olive oil and other good fats. It also talks about the importance of movement and stress reduction. A nourishing diet can go a long way toward helping someone come off of medications, even after a stent or heart surgery.

NOT A PUMP

Rudolf Steiner, the early twentieth-century thinker whose ideas led to the development of anthroposophical medicine, biodynamic farming, and Waldorf education, made an enigmatic statement to the effect that one of the most important things needed for the development of humanity is to understand that the heart is not a pump. I heard that statement as a young anthroposophical doctor thirty-two years ago, and I have spent over two decades reflecting on it.

William Harvey introduced the notion that the heart is a pump in 1628 in his book called *De Motu Cordis* ("On the Motion of Heart and Blood"). Harvey declared that the reason the blood moves in the body is because it is pumped by the heart. For some fourteen hundred years before Harvey, physicians had said that some force generated through water moves the blood. Harvey came along and said, "That's nonsense."

I think one of the reasons that Steiner thought this was so important is that Harvey's pronouncement marked the end of vitalism as a theory. What this means is that we stopped believing that there is any difference between death and life, or between living organisms and non-living entities. We came to believe that we could study human beings or other living systems through dissection and that we could learn everything we needed to know about the life of the human being by studying biochemistry and physics, as if we were inanimate objects. Nowadays, if you dare to mention something about "life forces" or "souls" or anything of that kind, you will be derided by the medical community. In fact, we have enshrined a particular view of science ("that which can be measured and quantified") as a national religion, although the true definition of science is "the search for truth."

AMAZING STROPHANTHUS

I have observed the effects of *Strophanthus* over and over again in the last ten years, even in people who can hardly walk to the mailbox. I use a *Strophanthus* extract, and when I find the right dose, it provides immediate relief, not only in people's ability to exercise but in their sense of well-being. In 1984, one hundred and twenty-two out of one hundred and fifty heart patients in West Berlin were free from angina after just one week of taking the proper dose of g-strophanthin/ouabain only, and all but four were free from angina after two weeks. In fact, in Germany doctors used to have a diagnostic test called the strophanthin test—if you gave someone a dose of oral *Strophanthus* in the midst of chest pain and it broke the chest pain, it confirmed the fact that the person had heart disease.

The problem
is that we
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own eyes or
our own
experience
of the world.

So is the heart a pump? Here are the details. You have this one-pound organ. In some parts, it is seven muscle layers thick, but at the apex it is one muscle layer thick, which means it is so thin that you could almost stick your finger through it. The heart has four chambers—two upper atria and two lower ventricles. The left ventricle is the chamber that supposedly “pumps” the blood through the rest of the body. Let me define what I mean by a pump. A pump is a pressure propulsion device. This means the movement of the blood comes from a squeezing of the muscle walls of the left ventricle. In other words, the blood comes into the left ventricle, the left ventricle squeezes which pushes the blood around the circulation and back to the right atrium, and then it goes to the lungs and so on.

Remember that the heart—a one-pound somewhat thin-walled muscle—has to squeeze the blood through a lot of really small blood vessels. If you laid all the blood vessels end to end, they would encircle the earth three times. How can this thin-walled organ, with one push, squeeze highly viscous blood containing white and red blood cells even just one time around the earth? For a majority of their travels, these white and red blood cells are approximately the same diameter as the blood vessels that they’re traveling in.

Think about this, too. The blood exits the heart very rapidly. It goes through the aortic arch, out and down, and then gradually slows until it reaches the capillaries. The capillaries are the junction where the blood stops and does a little shimmy and then gets going again. Although some people say that it does not stop but keeps moving, the blood can’t breeze through the capillaries because they are too small. Moreover, this is the stage in the process where the blood offloads oxygen and food—which is the whole point of the blood flow—and picks up carbon dioxide and waste products.

So the left ventricle is “pumping” the blood through the aortic arch, which is pointing the wrong way. If you’re going to go around the earth you have to pump pretty hard. Also, this arch is flexible. Picture a spigot outside of your house, and a flexible garden hose attached to the spigot shaped into an arch. This is like the aortic arch. What happens to the aortic arch when you

turn the “spigot” on full blast? It bends in. The harder you push, the more the aortic arch bends in. That makes no sense at all. There is no pump on earth that does anything like that.

FOURTH-PHASE WATER

To understand the pump, you also have to understand something about water. Here’s another old grandmother’s tale: “Matter exists in three states and only three states.” With copper, for example, you have solid copper, liquid copper and gaseous copper. According to this tale, all matter—every atom—exists only in these three states, and that’s all there is to it.

What about water? It is solid in ice form, liquid in water, and steam in gas form. We are told that human cells are 70 percent water, and you can prove that with a spectrophotometer. Which state of water is this intracellular water in? If it were liquid, you could take your leg and squish it with a big press and get a puddle of water on the floor. Having been an ER doctor and seen many people cut open, do you know how many people spout water out of their cells? Zero. So where is the water? There is no water, yet we know we are 70 percent water. Here is another question. Which state of water is gelatinous bone broth in? Ninety-seven percent water and 3 percent collagenous protein.

It turns out that the fundamental tenet of science about three states of water is wrong. There are actually four states. The fourth state is called the plasma state, gel phase, exclusion zone or structured water. Dr. Gerald Pollack wrote a book about this called *The Fourth Phase of Water*.⁶ This state of water forms whenever you put a hydrophilic surface like a protein in a beaker of water. As the water becomes structured, it also becomes negatively charged. If you roll this hydrophilic surface up into a tube, you will have a negatively charged gel phase lining the tube, and in the middle where the bulk (liquid) water is, you will have positive charges floating in the water. Because of the separation of charges, they repel each other and start to flow (and it must be true because you can see it on YouTube). The positively charged water starts to flow because of this repulsion, and it will flow indefinitely as long as there is a charge to this water system, for example, from sunlight or the earth’s elec-

tromagnetic field. Those things charge up the hydrophilic surfaces, making a more robust gel phase, which makes for more robust separation of charges, which puts more positive ions in the middle—which makes more flow.

The fourth phase of water explains a scientific anomaly called the barometric limit. If you take a column of water, no matter how thin the column is, at a certain height—thirty-three feet—gravity prevents the water from going up anymore. In other words, water can't flow up any tube higher than thirty-three feet before the weight of the water causes it not to be able to go up any further. Given this barometric limit, how is it possible for there to be trees more than thirty-three feet high? Maybe there could be trees that are about forty feet high because of transpiration, evaporation from the leaves, the pull of the sun, and so forth. But how do we explain trees that are three hundred feet high? The problem here is that we have been taught not to believe our own eyes or our own experience of the world. The answer is that the xylem sap that transports water from the roots to the aerial parts of plants is a hydrophilic tube. It makes a gel phase with positive ions squished in the middle. The sap can't go into the ground so it starts flowing up, and it will go up practically forever because of this hydrostatic pressure.

What is a capillary made of? It is made of a hydrophilic tube with a protective gel coating. All the vessels have a protective coating in them, which is very convenient because the coating is negatively charged and repels most poison while protecting the lining so it doesn't get inflamed or corroded. The positively charged protons formed during the creation of the gel layer are pushed into the inner fluid part of the blood. These protons repel each other (as do any positive charges when they meet) and this causes the blood to begin moving up the venous tree. No energy is required except exposure to sunlight, earth energy and human touch—all that charges up our cells and starts the flow moving. The blood then goes faster and faster until it gets to the heart.

In short, the blood pumps the heart, not the other way around. The blood rushes in and expands the heart, the gate (valve) opens, the blood is suctioned out, the aortic arch collapses

because of the suction, the blood essentially falls down with some spiral action of the arteries to finally reach the capillaries. There the blood cells come to a brief stop before hydrostatic pressure begins moving the blood back up to the heart through the veins. That's how the circulation works.

SEVEN-SIDED FORM

When you read Rudolf Steiner, it's like having the answers to the test before the test. Steiner said the heart is a seven-sided regular form that sits in an imaginary box in the chest. A "seven-sided regular form" means a three-dimensional form, and the "regular" part means the surface areas are all identical.

Plato described the five platonic solids, and said the earth was created as permutations on these five regular platonic solids. Steiner said that there is a sixth one, but nobody discovered that until Frank Chester, a geometrician from San Francisco, began looking into the subject. He spent fifteen years trying to figure how to sculpt a seven-sided regular form and then finally he did it. The form, called a chestahedron, has four sides that are equilateral triangles and three sides that are kite-shaped quadrilaterals, all with equivalent surface areas.

That discovery was a huge achievement in and of itself because the chestahedron had never previously existed as far as we know. Even more interestingly, when Chester made a model of the chestahedron and rounded off the edges, it fit right into the cavity of the left ventricle. Moreover, fitting the seven-sided form snugly in a cube, Chester found that the chestahedron sits at an angle of 36 degrees off of center and to the left, which is exactly the same angle at which the heart sits within the chest. (Rudolf Steiner said that this is the same angle the earth tilts its axis on to the left although science says it is 23 degrees.) The normal human temperature in centigrade is 36 degrees, and ancient physicians said the heart is the generator of warmth. Most people have a low body temperature, which means they have a weak heart.

Leonardo da Vinci also drew the heart at 36 degrees off center to the left with the cavity looking like the chestahedron. However, he believed the wall to be the same thickness the entire way around. You can still see da Vinci's anatomy drawing in medical textbooks, and I think most doctors would still say that the heart is the same thickness all the way around, but it isn't.

If the heart is a seven-sided regular form that sits in an imaginary cube-shaped box in the chest, why is that? What is it doing there? Frank Chester made a cast of the heart, put it into a vat of water and spun it to see what would happen. What happens first is that it creates a vortex, a spiral within the chestahedron itself, like the Milky Way. If you do it long enough, you'll see an appendix form that creates its own horizontally shaped vortex off the edge of it. The horizontal vortex closely resembles the shape and attachment of the right ventricle to the left ventricle of a human heart.

Frank Chester was not the first to identify the flow inside the ventricles. Leonardo da Vinci got a cow heart, made a mold of it, blew glass around it, put water through it and found that there is a vortex created in the water in the left atrium and the left ventricle. Da Vinci said that the

vortex facilitates the complete closing of the valves. Without the vortex, the valves wouldn't close as crisply as they do. Some cardiologists at Johns Hopkins and a few other places have taken da Vinci seriously. In fact, there are a lot of articles on the heart findings of Leonardo da Vinci, and they have proved within the last twenty years that, in fact, there are two vortices formed, one in the left and one in the right ventricle, which facilitate the closing of the valves. When the vortices don't form properly, that's when blood clots start to form. The vortex closes the valves by the pressure and adds a creative energy momentum to the system that helps the blood to move as well as creating an energetic field around the heart.

Putting these various findings together, we can see that the heart stops the blood flow, creates a hydraulic effect and creates creative energy vortices—which orient the cells that are floating in the blood so that they go down the central axis, keeping them and all the other stuff away from the walls to facilitate the movement.

HEART OF GOLD

Why do we say someone has “a heart of gold?” Everybody says that, even heart surgeons. People refer to a “heart of gold” or say “the heart is the seat of love.” If you don't believe me, tell your spouse or loved ones that you love them with all of your left kidney, your spleen or your foot. We say we love people “with all our heart,” yet we are taught that there is nothing but the physical stuff that you can see under the microscope.

When you dissect a cadaver in medical school and you come to the heart, you think you are going to find a Valentine's heart, but all you see is this lump of muscle. There is no gold in that heart, and there is no love in that heart. If there is no love in a heart, why do we say that? Where does that come from?

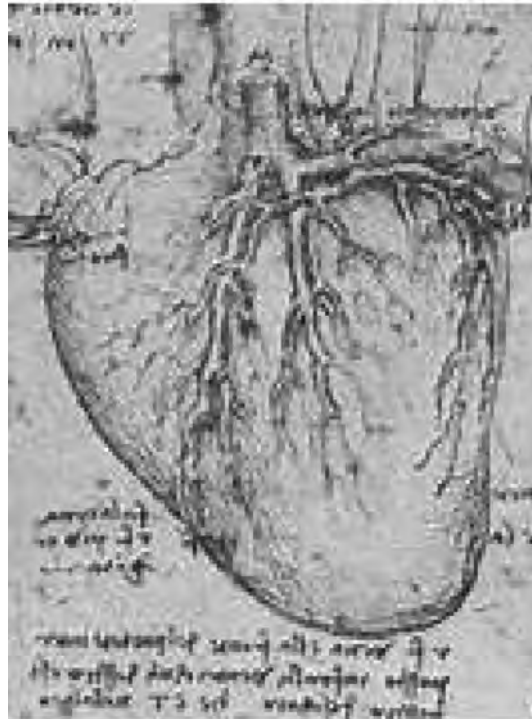
I have been interested in gold as long as I can remember. I always wanted to know why people wore gold crowns on their head and carried gold scepters. Mosques are gold-coated and

there is gold in the Bible. Gold is money. People mine gold. So what is the big deal about gold? You can't eat it, and you can't do anything with it. Who made this thing up about gold?

I have been a student of alchemy for twenty-five years. Have you ever seen a list of medieval alchemists? The list includes Galileo, Isaac Newton and Leonardo da Vinci. All the early geniuses of science spent much of their life as an alchemist trying to create gold, including the most revered alchemist of all, Elias Ashmole.

Why were they so interested in gold? Ashmole said, “If you know how to prepare gold properly, it is the elixir of immortality.” That's what all the alchemists said. They devoted their life to preparing gold because it was the “elixir of immortality.” What does that mean, and what does that have to do with the heart?

This gets into my criticism of conventional science and thought. We have a way of thinking about the body and the nervous system that I think is wrong. If you ask any neurologist or any doctor how the nervous system works, they'll describe a lengthy process involving things like neurons, axons, synapses, neurotransmitters and nerve impulses. But try doing the



following experiment. Put your finger out, close your eyes, ask someone to say “right” or “left” and as soon as you hear “right” or “left,” wiggle the tip of that finger in that direction. How long does it take between hearing the word and wiggling your finger? It happens in an instant. (If it takes you a long time, you've got a problem. In fact, in people with Parkinson's disease, Adams-Oliver syndrome and multiple sclerosis, you see that the response is too slow.) The neurologists will tell you that the movement happened because of nerve impulses and neurotransmitters, but those things are just the footprint or the residue of something else that happened.

So the question is, what can go that fast? We have millions of these things happening all at once all the time. Only light can move that fast. It's the light that transmits impulses down the nerve. We need light in us to move down the nerves to connect us to this “quantum coherent organism,” as it is called in physics. We are a unified organism connected in our entire being through light.

How does this light get generated? It turns out that there is a phenomenon called superconductivity, which happens predominantly through a group of substances called platinum metal substances and gold. The metal gold can actually exist in two states. The first is the normal, physical gold that we all know about. That means it is an atom, which has a nucleus

and electrons circling it and free electrons on the outer part that are free to interact with electrons of other substances to make a gold salt, such as gold chloride.

But the alchemists knew that there was another form of gold, called monoatomic gold. You form monoatomic gold by putting earthly gold through some sort of process, and as a result of the process the electrons on the outer coating are sucked into the nucleus and come under the control of the nucleus. It's analogous to when you see a figure skater with her arms out and then she pulls her arms in and goes faster and faster. The arms-out state is when the figure skater can connect with her partner; the arms-in state is where there is no connection with anything else and she goes faster and faster. When the electrons are in the pulled-in state, it is called monoatomic gold, meaning single atoms of gold disconnect from any other atoms, even other gold. This monoatomic gold is more pure than the purest metallic gold. It is "fixed" (non-reactive) and incombustible; its appearance is that of a fine white powder.

Monoatomic gold is superconductive, meaning it has no resistance. Systems that have this gold in them are able to super-conduct the properties that go into the formation of this gold. What are the properties that go into the formation of this gold? You know that you have to come out with light because somewhere in us we need enlightenment and that has to happen somewhere. Can you also take a guess as to one of the predominant ways of turning metallic

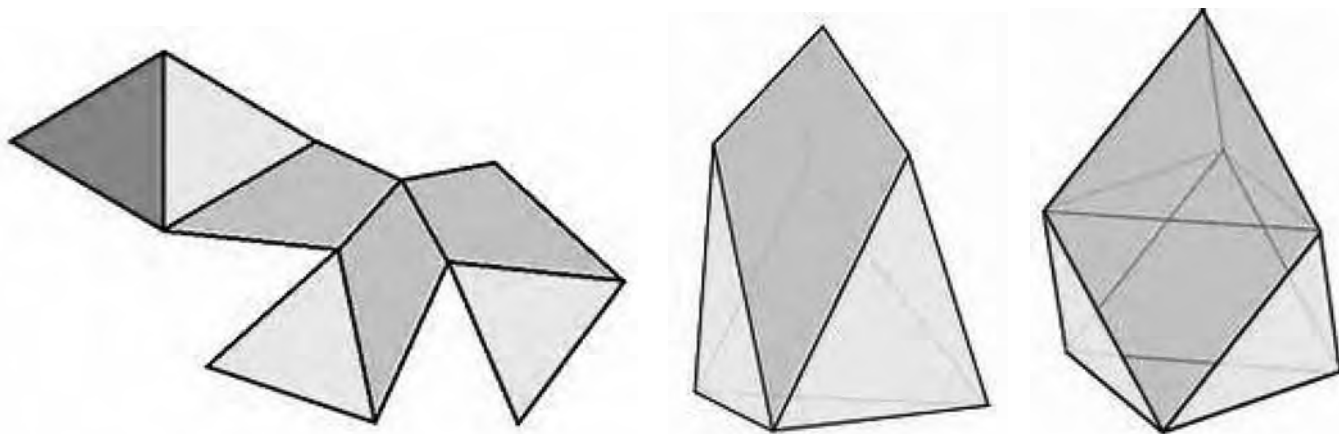
earthly gold into this high-speed monoatomic gold? Putting it through a high-speed vortex. When you put gold—which exists in our blood—in a high-speed vortex, I believe you can form monoatomic gold. It happens in our heart all the time. There is gold in the trace elements floating around the blood, in the same concentration as in sea water. You can take blood and distill it and use a spectrophotometer and you will find gold there. Despite the popular perception, the alchemists did not make monoatomic cosmic gold from base metals, they made it from gold.

Some people like to use aurum gold, which is a homeopathic preparation of metallic gold, to treat heart conditions, but it is not the right form of gold. It does not create the kind of gold that I'm talking about, and I have not seen any particular effect from using it to treat heart conditions. Similarly, fine particles of colloidal gold are not monoatomic gold.

Two things happen in the transformation of earthly gold into this fine white powder called monoatomic gold. Two things are liberated. First, in the process there is a flash of light. If you stand a pencil next to it, you will see the flash of light but the pencil does not move. There is no energy from the outside; it's just a conversion into light. The other thing that happens is that the powder weighs 44 percent less than the gold it started with, which is totally incomprehensible. Where did the mass go? It went into light.

Some people call this other state of gold the "antimatter" because it loses its weight. In


There are some very interesting foods that have monoatomic gold in them, including Concord grapes, aloe vera, burdock root, the skins of purple eggplants and scarlet kale.



THE CHESTAHEDRON

some way that I can't quite wrap my brain around, the monoatomic gold dust causes the pan it's sitting on to levitate. This "fairy dust" can cause something to rise and there's no physical connection of anything to that which is rising. How many people have seen a magnet and iron filings down below? Isn't that levitation? The magnet filings rise because of some unseen force that overcomes the gravity of the earth. Levitation is a real phenomenon. Thinking about creating this light and liberating it as the force of levitation brings to mind a quote from Stephen Hawking: "If you meet with your anti-self don't shake hands, you both would vanish in a great flash of light." In *The Egyptian Book of the Dead*, they said that they were using gold to make the pyramids and transport themselves into another dimension. They were using monoatomic gold.

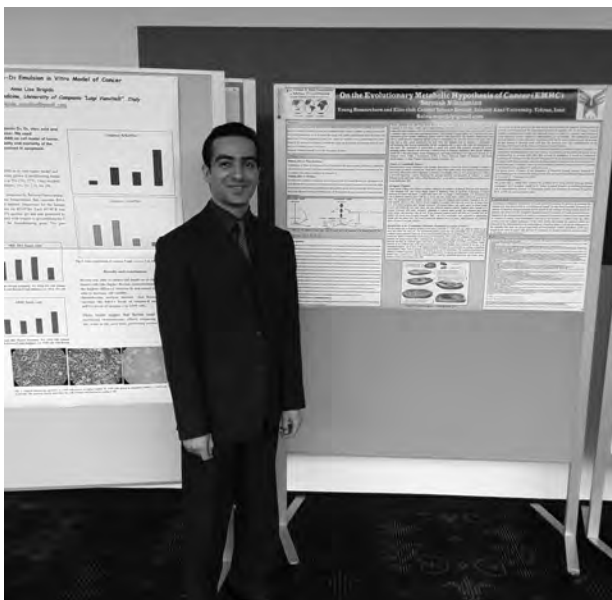
There are people who sell monoatomic gold. I was debating whether to whip out a bottle of monoatomic gold and with a flash of light go into another dimension. The problem is that it is not easy to come back. The fact of the matter is that we don't know how to do that yet. I do know that there are some very interesting foods that have monoatomic gold in them, including Concord grapes, aloe vera, burdock root, the skins of purple eggplants, beets and scarlet kale. Concord grapes are the highest food in gold elements. Generally speaking, the purple color, which is the color of royalty, tells you that there is gold in it.

Gold that is no longer earthly is the ultimate goal of nature. What happens in the heart when you transform gold through the vortex into this flash-of-light antigravity force? The light permeates our being and causes us to be a quantum coherent organism. It all comes back to the heart being a vortex that creates light, which translates into warmth and love. 

Tom Cowan, MD, is a holistic physician in private practice in San Francisco. He is the author of Human Heart, Cosmic Heart, The Fourfold Path to Healing, and co-author of The Nourishing Traditions Book of Baby & Child Care. He is a popular speaker at Wise Traditions conferences.

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WAPF VOICE AT THE FOURTH INTERNATIONAL CONGRESS OF INTEGRATIVE MEDICINE

Honorary board member Soroush Niknamian with his poster presentation at the Fourth International Congress on Integrative Medicine, held in Fulda, Germany, in April 2017. The poster, prepared by Soroush and his fiancée Dr. Somayeh Zaminpira, presented the evolutionary metabolic hypotheses of cancer.

The Accidentally Healthy Diet

The Feingold Protocol as a Gateway Diet

By Jane Hersey

What?! You allow white sugar? You allow refined flour? You call this a healthy diet?” Well, no, a healthy diet was never the aim. We prefer to call it a “healthier” diet because it’s healthier than the way most Americans eat.

The year was 1976 and parent volunteers from around the country met in Washington, DC. We created a national support group to help other parents of children whose behavior was out of control. They were good parents, doing “all the right things,” but their best efforts were not working, and the professionals they consulted were not helping. Like us, they had tried nearly everything they could think of, although most had not tried drugs since these were not as widely used back in the 1970s.

But we volunteers were the lucky ones. Thanks to the work of a remarkable doctor, we learned that the majority of children like ours would improve (often dramatically) if we removed a group of synthetic chemical food additives. The doctor was Ben Feingold, MD, chief of allergy at the Kaiser Permanente Medical Center in San Francisco. He had already been working with what he dubbed the “K-P Diet” for over ten years, had conducted clinical studies and written the book, *Why Your Child is Hyperactive*.

Dr. Feingold encouraged us to reach out to other families and use the practical experience we had gained to help them test out the program. We knew how to do this since we had received a crash course in what would later be called the Feingold Diet. None of this knowledge was available in other books or at universities; I often tell people that the supermarket was our classroom and our kitchens were the labs (and the guinea pigs were our kids!)

ADDITIVES AND DYES

The diet focused primarily on eating food that is free of synthetic dyes and artificial flavorings. As an allergist, Dr. Feingold knew that a person can be sensitive to or allergic to virtually anything. But unlike foods such as wheat or peanuts, these additives offer no benefit to the consumer, and simply enable food manufacturers to increase profits by making food with fake ingredients in place of the real thing. In addition, dyes are generally easy to identify in food. Removing them was a good first step as parents looked for the cause(s) of their child's abnormal behavior.

Dr. Feingold's primary intent was to show that food (and especially the chemicals added to food) can have a profound effect on behavior.

Dr. Feingold also recognized that the use of food additives had increased dramatically beginning in the late 1940s and had continued to accelerate. A child growing up prior to World War II ingested food dyes and artificial flavorings in the occasional lollipop or Halloween candy; but now these chemicals were added to countless foods. It wasn't only breakfast cereal, fake orange juice, toothpaste, vitamins and snack foods that contained dyes, but unlikely foods such as applesauce were given strange colors. As with drugs, the dose determines the outcome, and children were being overdosed on these potent chemicals. He saw that the rapid increase in the use of additives coincided with the rapid increase in the number of children who were having serious behavior and learning problems.

The program needs to be simple enough that even the most exhausted mother can try it. A switch from one version of an Eggo frozen waffle to another version is a simple step to take, even for a stressed-out mom.

We parents who used Dr. Feingold's program learned how to provide alternatives to the things that had previously filled our shopping carts. This was key to our success; we knew that taking away the foods our children enjoyed would fail, but substituting similar products free of the additives would not "leave a bad taste in their mouth."

In the 1970s most of us were stay-at-home moms, so a little more food preparation was very doable. The dramatic, often rapid change in our children made it more than worthwhile and we were no longer worn down by the daily struggles we once faced. Even if a child accidentally ingested one of the no-no's and had a reaction, we no longer worried that it was because we were bad parents. We generally could figure out what caused the problem so we could avoid it in the future, and we knew that it wouldn't be long before the reaction would be over and our real child would be back.

OTHER BENEFITS

The new regimen brought other benefits. Our formerly picky eaters soon were enjoying the real food we provided, and because they were typically bright, they quickly understood how additives were affecting them. Even three-year-olds, who were not able to pronounce the words, were telling people that they don't eat "ficials"—artificial additives.

Our kids enjoyed being in control of their own bodies, getting good grades, winning at sports, having friends, and just feeling good. They were happy to eat Mom's homemade cookies instead of the ones from a package; in fact, their friends also preferred the natural versions.

For many parents, the long-term goal of better health is not enough to convince them to improve their diet, but the prospect of three days with a hyperactive child is a terrific motivation!

PRODUCT INFORMATION

Despite the joy of finding solutions to our child's behavior problems, we still wanted to be able to use processed foods. It soon became apparent that we needed to have a way to systematically research brand name products, and so our Product Information Committee was formed. Like all of the other aspects of our volunteer work, we taught ourselves how to do this. As food companies became better at hiding ingredients in their foods and in the components of the foods, we have become more skilled at discovering their secrets.

We pooled our knowledge about which processed foods our children tolerated and we developed a detailed questionnaire for the manufacturers. This enabled us to create lists of "safe" brand name foods and made it easier for the new family to use the program. The food list grew to become a book, and we began to investigate restaurant food, especially the major chains that provided detailed lists of their ingredients.

THE WHOLE FAMILY

The Feingold emphasis is not on eating better so you won't get cancer in the future, it's about preventing your child's meltdown right now.

As the diet became more "user friendly," it attracted a larger number of interested parents. Even the more stressed-out mothers saw that they could change from the mac and cheese

mix with the dyes to the ones without them. They were able to find most of the foods they needed in their local supermarket and it usually involved a simple change in brands. These small steps generally brought about big improvements in their child, and for the first time it became clear that food really matters!

Happily, most of the children on the diet show clear—sometimes dramatic—improvements quickly. It's not unusual for a child to respond in a matter of days. This gives the family a terrific motivation to pay close attention to what they are eating. Many go from drive-through dinners to home-cooked food, and they soon see that it isn't just the child who was being harmed by petroleum-based additives. Any time there is a sensitive child, we know that at least one parent shares many of the symptoms. It is also typical that siblings show positive changes on the program, even if parents previously thought they "didn't have any problems."

Some families start with the Feingold "baby steps" and move on to progressively healthier food, eventually becoming Weston A. Price Foundation members.

Once the child calms down and the family becomes comfortable with the new way of eating, they are ready for the next step.

The key to improving our food supply is numbers. Back in the 1970s the typical "health food store" was small, dark and smelled of carob. Most shoppers never ventured in. But the huge success of Whole Foods and Trader Joe's is due to their ability to provide better versions of the foods people enjoy eating. We were doing this in our kitchens long before John Mackey opened his first Whole Foods Market in 1980.

Finally, enough people are now ditching the junk so that—for the first time ever—the Food Giants are being hurt where it counts (in dollars).

The Feingold Association has always focused on teaching people about dyes, not because they are the only harmful additive, or even the worst. But the thought of eating a petro-chemical that offers no benefit to the consumer, and lots of danger, is a compelling reason to take a closer look at what is going into one's shopping cart. Even if a parent does nothing more than ditch the synthetic dyes, they will automatically get rid of a host of toxic chemicals that usually accompany the dyes.

When a child's behavior improves dramatically, it can have a big impact on everyone who knew him "before."

HEALTHY SKEPTICISM

Another benefit from this quick course in food additives is that it creates a healthy skepticism. Feingold members begin to question authorities—their doctor, the Food and Drug Administration, their child's school, among others. Tony the Tiger and Ronald McDonald don't look so cute anymore. It becomes clear that the drug companies aren't really concerned about keeping us healthy. Vaccines might not be safe or necessary. Our government agencies aren't always working in our best interests.

The newly-informed family is much more open to understanding why GMOs are a problem, why butter is better than spreads, why factory-farmed meat is a bad idea and why it's worth it to pay more for organic milk—or even seek out real milk. They are ready to appreciate Dr. Price's ideas and understand the fine work of the Weston A. Price organization.



Jane Hersey is the national director of the Feingold Association of the United States (feingold.org) and the author of Why Can't My Child Behave? She became active in the parent support group after she saw that her husband's migraine headaches and daughter's "ADHD" were being triggered by food additives.

A former teacher and Head Start consultant, she has testified before the National Institutes of Health, the U.S. Department of Agriculture, and Congress about diet and behavior. She lectures at educational institutions, hospitals, medical groups, universities and schools.

THE FEINGOLD DIET

The Feingold Program is a form of elimination diet, a test to determine if certain foods/food additives are triggering a variety of symptoms. The main focus is on eliminating synthetic dyes, artificial flavors, three preservatives and synthetic sweeteners. Most of these are petrochemicals and are both toxic and unnecessary. At the beginning of the program a group of foods, primarily common fruits, are removed and can later be reintroduced and tested one at a time. Since these foods contain a chemical that is similar to aspirin, they can be problematic for some people even though they are healthy for most.

Dr. Feingold, who was chief of allergy at the Kaiser-Permanente Medical Center in San Francisco, found that the above additives and foods can affect people in many ways, depending upon their individual sensitivities. Any system of the body can be impacted, which is why they can trigger so many different symptoms involving learning, behavior and health.

Although the Feingold Diet was designed to help individuals track down offending foods and chemicals, it is also a simple baby-step into healthier eating. The Feingold Association researches brand name foods and provides lists of thousands of acceptable products.

Reading Between the Lines

By Merinda Teller, MPH, PhD

Much Ado about Obstetric Dilemmas

On average,
one in three
women in the
U.S. currently
ends up with
a c-section,
up from 5
percent
in 1970.

When you are an excited mom-to-be, and you know that natural childbirth is important for the health of mother and child, ending up with a cesarean section (c-section) can be disappointing and even traumatic. Post-surgery, you may mourn not having a Leboyer-style gentle childbirth experience,¹ or regret the baby's missed opportunity to encounter beneficial microbes in the birth canal,² or stew about the potentially deleterious effects of surgical birth on your infant's brain and long-term health^{3,4}—but it is a pretty safe bet that you are probably *not* thinking about how your underperforming womb contributed negatively to human evolution.⁵ Yet a group of theoretical biologists at the University of Vienna made headlines last year with just such a hypothesis.⁶

The Austria-based researchers are interested in what is known as the “obstetric dilemma,” namely the “longstanding evolutionary puzzle why the pelvis has not evolved to be wider.”⁶ Apparently this puzzle has been with us since the late Pleistocene era, when increasingly large-headed neonates were greeted by a pelvis previously adapted to the narrower requirements of bipedalism.⁷ Notwithstanding strong selection pressure, pelvic evolution seemingly never caught up to those big-brained babies. As a result, according to these researchers, the obstetric problem of “mismatched” fetal heads and maternal pelvises (called cephalopelvic disproportion or CPD) has persisted up to the present day, contributing to the sometimes life-threatening condition of obstructed labor.⁷

SURVIVAL OF THE UNFITTEST

Under the circumstances of overly large babies trying to ram their way through the birth canal, c-sections claim considerable credit for coming to the rescue of the beleaguered mothers. Given that obstructed labor is a frequent

direct cause of maternal mortality in many lower-income countries in particular, global health experts view increased access to surgical delivery as a life-saving necessity.⁸ The World Health Organization (WHO) generally suggests that a country's “ideal” c-section rate should be 10 to 15 percent, although some health researchers have suggested that high-maternal-mortality countries should set their c-section target at roughly one in five women (19 percent).⁹

In the United States, of course, we have gone well beyond the WHO's modest 10 percent threshold. On average, one in three women in the U.S. currently ends up with a c-section, up from 5 percent in 1970.¹⁰ C-section rates are twice as high in older mothers (forty years or older) as they are for young mothers under age twenty, and rates rose in the over-forty age group from 30 percent in 1996 to a shocking 50 percent in 2010.¹¹

According to the Vienna research group, the escalating c-section rate is having an “evolutionary effect.”⁵ Although the investigators are too polite to criticize surgical intervention, their evolutionary perspective posits that c-sections are allowing women with narrow pelvises to survive birth and “pass on their genes encoding for a narrow pelvis to their daughters,” theoretically ensuring that there will be even more c-sections in the future.⁵

FUNDAMENTAL LAWS OF HEALTH

Underlying the theoretical biologists' narrative is an assumption that childbirth has always been problematic due to the basic antagonism between “neonatal encephalization” and “maternal bipedal locomotion.”¹² Other researchers dispute this assumption, however, suggesting that mothers' pelvic dimensions and fetal growth patterns are exquisitely sensitive to “ecological factors,” including diet.¹² These

investigators believe, therefore, in the power of nutrition to remediate maternal and perinatal mortality at least over the long term.

Back in the 1930s, an English doctor named Kathleen Olga Vaughan reached similar conclusions about the relevance of environmental influences. Dr. Vaughan extensively studied childbirth and factors associated with childbirth success or difficulty, doing first-hand research in various settings, including India, as well as extensively reviewing the scientific literature available at the time. In her fascinating volume, *Safe Childbirth: The Three Essentials*,¹³ Vaughan firmly rejected the view of difficult childbirth as “a matter of chance” or as a turn of events “dependent upon the will of Heaven,” instead asserting unequivocally that childbirth difficulties resulted from violating “the fundamental laws of health.” Far from viewing childbirth as universally dangerous, Vaughan assembled considerable evidence supporting her claim that labor is supremely uneventful when mothers-to-be are allowed to grow up in accordance with the “laws of health.” Stated another way, Vaughan argued that easy childbirth depended on “environment and the *conditions in which the mother spent her childhood*” [emphasis in original].

To illustrate her arguments, Vaughan’s volume offers many interesting first- and second-hand observations of sub-populations of women for whom difficult childbirth was nearly unknown. Regular readers of *Wise Traditions* may find it noteworthy that many of her descriptions of women experiencing easy childbirth also called attention to the excellent dental health of the women and their children. For example, boatwomen in Kashmir—who traveled with a milking goat or cow on board—“never had trouble in childbirth” and were “graceful, healthy, cheerful people, their smiling faces showing perfect teeth.”

For these women, “perfect teeth, good bodily development, and *intelligence* [were] the rule” [emphasis in original]. In fact, Vaughan devoted half a chapter to a discussion of the teeth and jaws as indicators of “good bodily development” and especially pelvic capacity. Based on her extensive theoretical and practical experience, Vaughan concluded that perfect teeth equate to easy childbirth, while conversely there is an “essential connection between civilization, caries and difficult childbirth.”

The importance of sunlight and an active life out of doors are recurrent themes in *Safe Childbirth*. Commenting on Indian women living in purdah (female seclusion), Vaughan noted that the women often led a life completely devoid of sunlight, causing many to develop osteomalacia (a form of bone weakening similar to rickets). Under such circumstances, it came as no surprise that the women had abnormally high rates of difficult labor. Vaughan commented, “In all countries and districts where teeth are good, the life is an open-air one with simple food; the food, of course, varies in different places and under different conditions, but the free open-air life is a constant factor.” Reinforcing the relevance of environmental factors, Vaughan also observed that easy and difficult childbirth might coexist within the same country, race or even family and that lifestyle was the determining factor: “Easy childbirth characterizes those living an outdoor life while difficulty is the portion of those living indoors from infancy, confined there by social or educational tyranny.”

In one chapter, Vaughan drew from an ethnography called *The Maori* to illustrate the tragic transition from easier to more difficult childbirth that she and others such as Dr. Weston A. Price started witnessing in their era. The author of that work (New Zealand ethnographer Elsdon Best) remarked: “Children from 6 to 12 years used to run about naked and their teeth

Vaughan firmly rejected the view of difficult childbirth as “a matter of chance,” instead asserting unequivocally that childbirth difficulties resulted from violating “the fundamental laws of health.”

DR. VAUGHAN AND DR. PRICE

Not surprisingly, Dr. Weston A. Price was aware of Dr. Vaughan’s work. In *Nutrition and Physical Degeneration*, Dr. Price recommended that *Safe Childbirth* “be made available for reference in the school libraries of the United States.” Discussing the generational changes that were beginning to occur with the transition away from nutrient-dense foods, Dr. Price remarked, “I am informed by gynecologists that narrowing of the pelvic arch is one of the factors that is contributing to the increased difficulties that are encountered in childbirth by our modern generation.” Dr. Price concurred with Dr. Vaughan that “method of life” and nutrition are key determinants of proper structure and function for future parents.

Vaughan's research distilled "three essentials" of easy childbirth: a round pelvic brim, flexible joints and natural posture.

were perfect. Now the teeth begin to decay, the race suffers from consumption, and there is also trouble in childbirth." Best attributed the problems with childbirth to "the adoption of European medicines, food, and clothing."

THE THREE ESSENTIALS

Vaughan's research distilled "three essentials" of easy childbirth: a round pelvic brim, flexible joints and natural posture. With regard to the first, Vaughan identified several reasons why a round or circular pelvic brim facilitates easy labor. First, a round brim offers the self-evident advantage of making everything roomier. Second, the round brim "matches the halo measure [circumference] of the fetal head, so that they fit as a cup and ball fit one another." Just as important, the round brim "always co-exists with a well-shaped outlet," which offers the baby easier passage through the birth canal.

Unfortunately, Vaughan observed that a trend toward an oval rather than circular brim had accompanied the advances of "civilization." In a simple but compelling illustration (Figure 1), Vaughan noted that the circle and oval have the same circumference, but the oval has less area and causes more difficulties during childbirth. Vaughan then asked her readers

to consider why this "strange metamorphosis" from round to oval occurs. It turns out that the other two "essentials" have something to do with it. For example, mobile pelvic *joints* play a key role in the development of normal pelvic *shape*. Vaughan cited a researcher who believed that "much backache and suffering which women endure might be entirely avoided if young and growing female children were made to do exercises in the prone position at school, such as crawling exercises—to keep the sacro-iliac joints supple—which will be of such value to them when they reach the child-bearing age."

Drawing on anthropological evidence, Vaughan also pointed out the especially critical role of posture, the third "essential." Anyone who has contemplated the superb photos in Esther Gokhale's book, *8 Steps to a Pain-Free Back*,¹⁴ will understand Vaughan's statement that "posture and posture alone can cause modifications in the skeleton of a person in perfect health." Vaughan noted that habits such as sitting for long hours at school could bring about undesirable changes in structure.

Vaughan emphasized that the pelvis is the most rapidly growing part of the whole body, but particularly during the crucial preadolescent and early adolescent years. Vaughan's discussion of

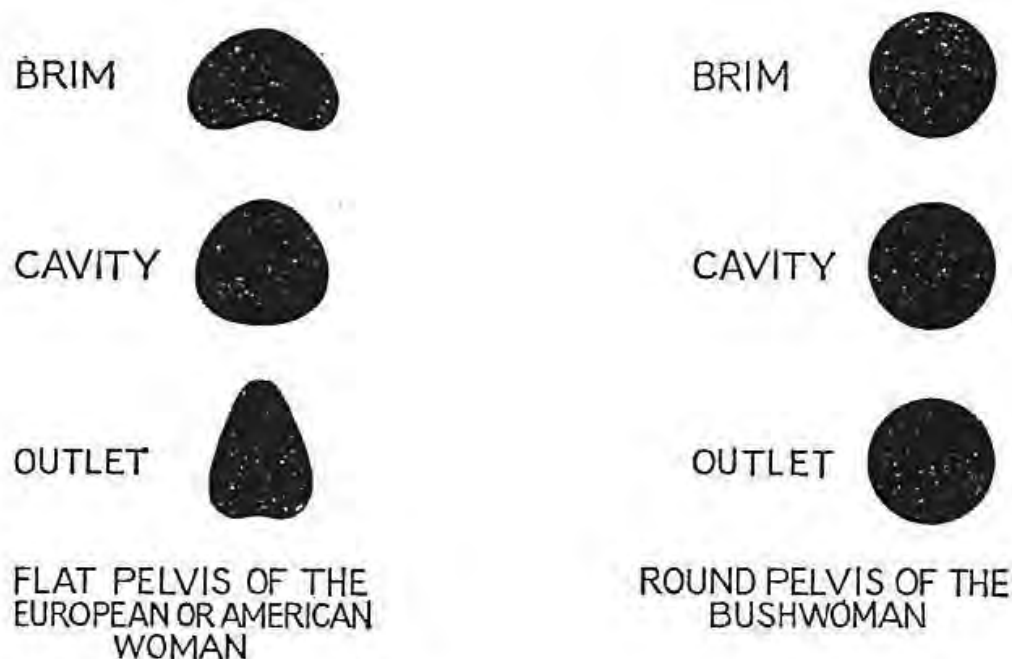


FIGURE 1: Distorted pelvic opening in a European woman versus a normal round pelvic opening in a traditional woman.

osteomalacia has great relevance for the young girls of today, because Vaughan believed that weak bones were entirely preventable. Vaughan reached the conclusion that the “crumpled” pelvic shape characteristic of osteomalacia was “entirely attributable to factors operative in the patient’s own lifetime”—and especially to “conditions prevailing *before puberty*” [emphasis in original].

Given that many people are currently returning to an awareness of the pivotal importance of sunlight for good health,^{15,16} Vaughan’s prescription for heliotherapy and her beliefs about sunlight’s central role are quite intriguing. In short, Vaughan believed that “difficult childbirth either in the East or the West is caused by faulty pelvic development due to want of sufficient light on the skin during the years preceding puberty.”

NEW CHALLENGES

In recent years, there has been an appalling increase in maternal mortality in the US, making it an outlier among rich nations.¹⁷ Over the eighteen-year period from 1990 to 2008, maternal mortality doubled, giving the US the unimpressive rank of fiftieth in the world.¹⁸ According to Ina May Gaskin, famed author of *Spiritual Midwifery*, the maternal death ratio (number of maternal deaths per hundred thousand births) “is almost five times as high as it should be” for all American women, and “more than ten times what it should be” for African American women.¹⁹

In purely economic terms, women’s health advocates note that “for a country that spends more than any other country on health care and more on childbirth-related care than any other area of hospitalization... this is a shockingly poor return on investment.”¹⁸ The trend also gives special meaning to Vaughan’s macro-level observation that “the number of women who die in childbirth [is] a rough index to the rate at which any nation is going downhill.”

The increase in maternal mortality has been driven, in part, by the explosion of chronic medical conditions such as diabetes, obesity and heart disease.²⁰ The head of the Centers for Disease Control and Preven-

tion’s Maternal and Infant Health Branch has commented, “The really scary thing to us is all the deaths from cardiovascular disease and heart failure,” noting that these represent fully one-fourth of all maternal deaths.²⁰

Many of these chronic ailments also increase a woman’s chances of ending up with a c-section. For example, obesity is a known risk factor for surgical delivery.²¹ Given that failure to progress and CPD are among the top indications for cesarean deliveries in young women under the age of twenty-five,¹¹ it is discouraging to note that c-section rates for both of these two indications also increase markedly with level of obesity.²²

Further, c-sections increase the risk of life-threatening complications in and of themselves.²³ For example, cesarean delivery nearly doubles a pregnant woman’s risk for thromboembolism (blood clots), another leading cause of maternal deaths in the US.²⁴ A Scandinavian study found that c-sections were associated with an elevated risk of a thromboembolic event for as long as one hundred and eighty days postpartum, which is well beyond the six weeks typically defined as the postpartum period.²⁵

RECLAIMING CHILDBIRTH

Overall, the Vienna researchers’ claims seem strangely oblivious to the role of nutrient-dense diets and other important lifestyle factors that powerfully shape the health and childbirth

CAN THIS BE NORMAL?

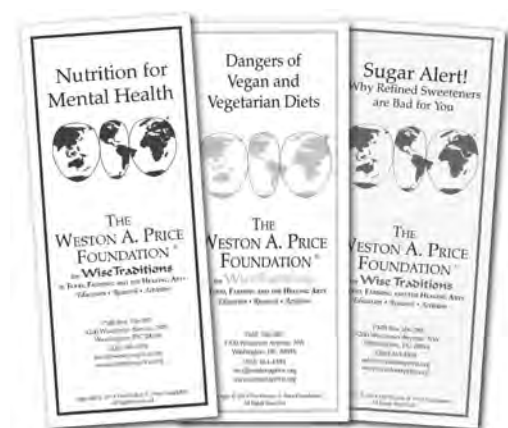
The dismal childbirth trends that we observe today were already well under way in Dr. Vaughan’s time. Vaughan quoted a leading work on obstetrics from the 1930s by Joseph De Lee: “Is labor in the woman of today a normal function? I say it should be, but it is not. Can a function so perilous that, in spite of the best care, it kills thousands of women every year, that leaves a quarter of the women more or less invalided, and the majority with permanent anatomic changes of structure, that is always attended by severe pain and tearing of tissues, and that kills 3 to 5 percent of children—can such a function be called normal?”¹³ Vaughan herself described the “bruising and tearing of soft parts, the exhaustion of the mother, the risk of sepsis and of puerperal fever, all conditions directly due to this primary failure of adaptation between mother and child which lengthens out the natural process of birth into many hours, or even days.”

Vaughan’s book offers numerous descriptions of uncomplicated childbirth taking place in natural settings without distress. In contrast, modern hospital-based birth has become a highly controlled and frequently disempowering experience: “The intravenous [IV] drips commonly attached to the hands or arms of birthing women make a powerful symbolic statement: [the drips] are umbilical cords to the hospital. By making her dependent on the institution for her life, the IV conveys to her one of the most profound messages of her initiation experience: in the contemporary American technocracy, we are all dependent on institutions for our lives, ‘umbilically’ linked to them through the water and sewer pipes, electrical wires, and TVs that pervade our homes, through our banking accounts and credit cards, and increasingly through our laptops, cell phones, iPads, and the like. The rituals of hospital birth are not accidental—they are profound symbolic and metaphoric expressions of technocratic life.”²⁶

outcomes of mothers-to-be. This does not mean that we are going down a blind alley, however, when we consider the implications of so many c-sections. Belatedly, other investigators are pointing out the need to examine both the risks and benefits of cesarean delivery, particularly since research is uncovering a much higher incidence of chronic diseases (including asthma, obesity and type 1 diabetes) in children born via c-section.⁴ If c-section babies are indeed missing out on maternal microbiome exposure—as well as brain stimulation, important early bonding and probably many other as-yet-unidentified but irreplaceable aspects of natural childbirth—then we may indeed be setting transgenerational (or epigenetic) changes into motion. What will happen when a sizeable proportion of the population has a hospital-generated microbiome? It is only slightly reassuring to hear that the Austrian researchers do not believe that non-surgical births will become fully “obsolete.”

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Homeopathy Journal

ADRENAL FATIGUE: TESTS REQUIRED? NOT ALWAYS!

By Joette Calabrese, HMC, CCH, RSHom (NA)

Everyone knows one. You know—those uncommon people you meet who have *joie de vivre* oozing from their pores. They have accomplished more in the last year than most of us can in a lifetime. Each time you see them, you have to restrain yourself from asking what they eat, why their skin is glowing, what are the secrets behind their success—basically how they live their lives.

That's exactly how it is with Sunny. Just one look at her is enough to convince anyone that she must be dabbling in something unknown to the rest of us. However, things are not always as they seem. There was a time when Sunny was really dragging, and she hid it from everyone. She lived a secretive life. It was a struggle for her to get up in the morning and an effort to get dressed. The next battle was to get breakfast for her family and then to do the beastly dishes. Everything was an effort. Life was a protracted, relentless, effortful drag.

MANY SOURCES OF FATIGUE

A naturopath Sunny visited reviewed her test results and offered the explanation: she suffered from adrenal fatigue. Frankly all she remembered was the operative word “fatigue” in the naturopath's diagnosis. Just thinking about the naturopath's advice to take numerous supplements left Sunny feeling exhausted. Fortunately, Sunny was an ardent student of homeopathy. She happily eschewed the recommended supplements and instead tasked herself with analyzing her illness through the lens of homeopathy.

Allow me to clarify that in homeopathy (particularly in the method that I employ and teach), we do not identify the adrenals as the cause of fatigue. Indeed, fatigue can emanate from a variety of sources and circumstances. In Sunny's case, her fatigue could have resulted

from having had three babies in four years, from her long career in nursing, or from a trying bout of influenza. In others we might encounter fatigue related to grief or childbirth, fatigue from having too much coffee or chocolate, fatigue as a side effect of conventional drug therapy or even fatigue stemming from low testosterone in men. The homeopath's analysis of fatigue depends less on how the endocrine system reads on lab reports and more on the individual's predominating circumstances. Do we need a saliva or blood test to prove the point? Not if we use homeopathy.

HOMEOPATHIC REVIVAL

Unfortunately, from the late 1940s until recently, the practice of homeopathy has been rather sluggish in North America. You might even say it too has been suffering from adrenal fatigue. Despite its determined advocates, the pharmaceutical industry has beaten up homeopathy in the market square and forced it to take a back seat to allopathic medicine.

But not to worry. Today homeopathy is experiencing a revival! Because of the Internet and the resulting unfettered access to information, you might say that homeopathy has received a much-needed shot of adrenalin. The timely resurgence of homeopathy in the last decade or so has raised awareness of homeopathy's potential to correct conditions such as adrenal fatigue, food intolerances and chronic allergies.

At just about the time of this homeopathic renaissance, Sunny discovered and embraced homeopathy. She recognized that the fatigue she was experiencing while her last child was nursing was serious—more serious than any she had ever felt in the past. Her baby, Gino, nursed voraciously. Nighttime feedings seemed endless, and during the day it was like a feeding frenzy! Although Sunny did what she could to keep up

The homeopath's analysis of fatigue depends less on how the endocrine system reads on lab reports and more on the individual's predominating circumstances.

The homeopathic medicine *China officinalis* is specific for fatigue after the loss of bodily fluids, which makes it a particularly useful remedy during nursing.

with Gino's appetite, preparing nutrient-dense foods for them both, he was a gulch of hunger. (There is a way to correct this with homeopathy. Read on to learn how.) Sunny also noted that her fatigue did not seem to correlate exactly with the birth, because she had had plenty of pep for months afterward, with the immense fatigue only hitting about a year later.

FATIGUE AND FLUIDS

Luckily, Sunny was taking a course in homeopathy and knew that several homeopathic medicines are available to correct fatigue. She learned that the homeopathic medicine *China officinalis* is specific for fatigue after the loss of bodily fluids, which makes it a particularly useful remedy during nursing. The history of *China officinalis* is fascinating. It was the very first medicine that Dr. Samuel Hahnemann "proved" (or tested) homeopathically back in the eighteenth century while endeavoring to cure malaria. Hahnemann found that cinchona bark, which had been used with limited success in its gross form, was a reliable and fully capable medicine for malaria when prepared as the homeopathic remedy *China officinalis*.

Given that Gino's ravenous appetite was likely depleting her of not only fluids but also corresponding nutrients, Sunny began taking *China officinalis* 200C every day. Within a week, she forgot that she had been so tired! She skipped her daily nap and forgot that she had previously only wanted to sit in front of a computer screen and vegetate instead of tackling her daily tasks. She forgot all about the fatigue, that is, until her husband noticed (even before she did) that in addition to her usual duties, she had cleaned the basement, made lasagna from scratch and gone grocery shopping—all in one day!

Sunny was incredulous. Despite being enamored with homeopathy, she could not stop wondering whether it was possible that a single homeopathic medicine could put her adrenals into shape in that short amount of time. Just to confirm her experience and understand it more thoroughly, Sunny dug around in her homeopathic *Materia Medicas* (reference books that provide detailed indications for the application of specific remedies).

From Dr. Frans Vermeulen's *Concordant Materia Medica* (which includes the works of ten other homeopathic physicians from the last two centuries), Sunny found this description of the medicine *China officinalis*: "Debility from exhausting diseases, from loss of vital fluids and nervous erythrim, calls for this remedy. The patient becomes weak. Aversion to all mental and physical effort." Under the heading of *China officinalis* in Dr. Roger Morrison's *Desktop Guide to Keynotes and Confirmatory Symptoms*, Sunny found this list of symptoms: "Anemia, debility, weakness, collapse, pallor, fluid loss such as from hemorrhage, diarrhea, nursing, pus, etc." All of this information confirmed what Sunny had experienced. She knew that other stressors also could alter cortisol levels, but the *Materia Medicas* assigned *China officinalis*' corrective capacity mostly to fatigue due to loss of fluids. And it had worked!

OTHER SUCCESSES

Not long after that, Sunny's friend Minnie had a miscarriage and subsequently hemorrhaged while in the hospital. Her doctors decided that Minnie would probably require a blood transfusion. Given what Sunny had learned about *China officinalis*, it was not a big leap for her to decide to bring a bottle of the remedy to her weakened friend. Sunny told Minnie how to use the remedy and also gave her friend a few jars of homemade liver pat . A few days later, Minnie's hemoglobin count was closing in on normal with unexpected speed. Surprised, the medical staff sent Minnie home without the planned transfusion. Sunny was elated that she had a hand in her friend's recovery.

Even now, Sunny will pop a few pills of *China officinalis* 6C (or 6X) into her husband's mouth before, during and after he runs marathons—particularly in the hot weather when he perspires heavily. He tells his friends that it keeps his energy consistent. Once again, when fluids are lost, *China officinalis* to the rescue!

If you met her today, you would find it hard to believe that Sunny once spent as much time as she could on the couch, had little interest in taking on projects and did what she could to bribe her kids to prepare family meals. Today, Sunny's shiny personality and energetic demeanor are a

source of admiration and even envy to many.

As for baby Gino, Sunny gave him *Calcar-ea phosphorica* 3X and *Lycopodium* 200C twice daily for a few months to reduce his voracious appetite. As a result, his hunger was no longer insatiable nor his belly distended. At present, Gino no longer needs to take these remedies, nor does Sunny require *China officinalis*. Why? Because homeopathy aims to correct conditions, rather than suppressing, supplementing, or even supporting—homeopathy simply uproots the ailment.

Sunny initially learned about *China officinalis* in one of my courses, where I teach students about the remedy's utility for nursing mothers. I myself learned the practical use of this medicine in Kolkata, India, from the doctors who work under Dr. Pratip Banerji. There

they use the remedy for Indian village women who work tirelessly in the fields under the hot sun. *China officinalis* is their go-to medicine for physical over-exertion.

China officinalis has become my go-to medicine for any adrenal fatigue condition that arises from fluid loss. No saliva test needed. No blood test required. Just common sense and practical homeopathy. ☯☯

Joette Calabrese, HMC, CCH, RSHom(NA) is a homeopathic practitioner of twenty-plus years who specializes in gut conditions. She is also a mom who raised her now-adult children on WAPF principles and homeopathy...only. Joette offers free solutions, such as how to uproot food intolerances without special diets. Learn her practical, proven homeopathic protocols today and use them tonight! Go to joettecalabrese.com/quickstart-guide/ or call (716) 941-1045. If you are interested in a pdf of the salient points covered in this article to build your homeopathic library, type: joettecalabrese.com/WTI into your browser and download the card-sized searchable pdf document.

RAW MILK COURT PROCEEDINGS IN ONTARIO, CANADA

The outcome of a May 29 hearing in Canada will determine the availability of raw milk for the whole country. The hearing was about the injunctions issued by York Region and Ontario in 2016. These injunctions aimed to stop distribution of raw milk from the alleged “milk plant” at Glencolton Farms. The farm, cooperatively owned by one hundred fifty families, is located about two hours northwest of Toronto, in Grey County near Durham. If granted, the injunctions would prohibit the sharing of raw milk in the York Region. While there are currently laws on the books in Canada that prohibit sales of raw milk, the families who own Glencolton Farm argue that these laws are not applicable in this situation because it is only the owners of the farm who have access to the milk. Simcoe Region and Peel Region have joined the injunction application, affecting people in those jurisdictions as well. If the judge grants the injunctions, those who continue to participate in the production, bottling or delivery of the milk would face criminal contempt of court charges.

If all Canadians comply with the injunction, there will be no more raw milk available in Canada except to the few dairy farmers who live on the farms.

Almost three hundred supporters showed up at the courthouse each day to witness the hearings. The courtroom overflowed to the jury selection room where proceedings were livestreamed by the court.

On Monday and Tuesday, the Crown gave their submissions to the court. Their lengthy submissions left out important details including how the farm cooperative operates and nuances in the Milk Act that are important to the case. On the third day, Elisa VanderHout gave submissions to the court on behalf of herself and the Agriculture Renewal Cooperative. She took most of the day to go over the details missed by the Crown's attorneys. She offered the court full information about how the cooperative was structured and how it works to remain within the law. She was followed by Jona Evans, the pastor of the church where farm owners meet to pick up their items from the farm. He submitted to the court on behalf of the church community.

Markus Schmidt, Michael Schmidt's son, closed out the day with his powerful submission about what it was like to grow up with the constant threat of farm raids and the devastating effect the ongoing raids had on his family.

Michael Schmidt gave his testimony on June 5 followed by Skip Taylor, a representative for Our Farm Our Food Coop.

The judge will issue a decision after reviewing all submissions.

According to Elisa VanderHout, speaking on behalf of the Agricultural Renewal Coop and the farm owners, “We are glad this part of the court proceedings are over. One way or another, the results of this hearing leave us with a clear path. However the judge rules—it will affect us all.”

Technology as Servant

DANGERS OF GLUTEN-FREE FOODS

By John Moody

Whether for fun, for fad, or for health recovery, “gluten-free” is the word of the day.¹ Going gluten-free is incredibly popular—over one-fourth of Americans report eating gluten-free foods at least some of the time.² Among people who identify themselves as health-conscious or who espouse diets such as GAPS (Gut and Psychology Syndrome), paleo, or other similar dietary approaches, the numbers may be even higher.^{2,3} Market researchers expect the gluten-free industry to reach around five billion dollars by the beginning of the next decade, and North America ranks as the fastest growing segment of the world’s gluten-free market.⁴

Unfortunately, there are a number of dark sides to eating a gluten-free diet. Gluten-free proponents and adherents may not have sufficient awareness or warning of these dangers, especially when it comes to consuming ready-made gluten-free products.

HEAVY METALS

The first—and biggest—concern with many gluten-free products is that they contain alarming amounts of heavy metals. A recent study found higher (and clearly measurable) levels of heavy metals in individuals who reported eating a gluten-free diet compared to people consuming a standard diet.^{5,6} According to a description of the study in *New York Magazine’s* food and restaurant blog, “Subjects with the highest concentrations [of heavy metals] had double the arsenic, a metal used in pesticides and herbicides that was used to make [the herbicide] Agent Blue during the Vietnam War, and 70 percent more mercury than the average person.”⁷

What could cause such elevated levels of heavy metals? One explanation is that most packaged gluten-free foods are heavily dependent on a few key ingredients and grains, especially rice. *Consumer Reports* and other groups

have studied rice and shown that it is heavily contaminated with arsenic and mercury.^{8,9} Moreover, organic rice offers no advantage over non-organic rice with regard to heavy metals. This is because rice—organic or not—is partial to arsenic and mercury in the same way that tea plants show a preference for taking up fluoride from soil. For many decades, U.S. agriculture was dependent on pesticides, herbicides and animal feed additives that contained arsenic, leaving it in high levels in the nation’s waters and soils. In addition, in some areas of the U.S., greater amounts of arsenic and other heavy metals are available to the soil from underlying rock and other geological formations.

The findings about arsenic and mercury are especially troubling for pregnant and nursing mothers who are eating gluten-free foods and food mixes. They are also disturbing for young children, who are more vulnerable to heavy metals because of body weight and their developmental stage.

GLYPHOSATE

The term “gluten-free” is a marketing powerhouse. Many consumers assume that gluten-free products are clean, pure and wholesome, or think that gluten-free is a synonym for organic. The president of a company specializing in gluten-free product ingredients states that whereas gluten-free was “once considered a micro trend,” it has now “become firmly entrenched in consumers’ minds as ‘good for you.’ Consequently, gluten-free is not a trend anymore, but a lifestyle.”¹⁰ This same executive continues, “Health-conscious consumers who don’t have any intolerance or allergy issues are increasingly likely to choose gluten-free products, seeing them as healthier alternatives to gluten equivalents.”¹⁰

As if heavy metals weren’t enough of a concern, it turns out that gluten-free foods can cause other types of harm as well. Despite the positive connotations of the gluten-free label, a gluten-free product offers absolutely no guarantee of being organic, natural or unprocessed. On the contrary, gluten-free foods, just like any and all conventionally raised foods, show high levels of contamination with industrial agricultural chemicals, and especially glyphosate (the key ingredient in Roundup). In fact, in a shocking surprise, it appears that non-organic gluten-free foods actually show higher levels of residual contamination with glyphosate than their non-organic wheat-based counterparts!¹¹

A citizen blogger in Canada, Tony Mitra, has obtained and examined thousands of records of foods tested for glyphosate by the Canadian Food Inspection Agency (CFIA).^{11,12} Mitra comments, “One kind of presumably healthy food category that has really surprised me with astonishingly

high glyphosate content—is gluten free food,” adding that “anything that has ‘gluten-free’ mentioned has become suspect in my mind.”¹⁰ Mitra found that the CFIA’s average glyphosate readings for gluten-free items produced in the U.S. and Canada were “between two and three times the national average for USA and Canada, which are already high to start with.”¹¹

To say that these findings are startling and troubling is an understatement. Given what we are learning about glyphosate’s many damaging effects on the human biome and body,¹³ consuming only organic gluten-free foods is of immense importance.

PHYTATES AND ANTINUTRIENTS

Even if you stick with non-rice-based, organic gluten-free foods, there is one final problem lurking in all that “healthy” gluten-free packaging and messaging: phytates (also called phytic acid) and other antinutrients. Phytates bind with minerals and block proper absorption of minerals such as iron, zinc and calcium. Almonds and oats, which are common ingredients in gluten-free foods, are both high in phytic acid. Soy is another exceptionally high source of phytic acid. Although rice has lower phytic acid than many other grains, phytic acid is still a concern. Processes that can reduce phytic acid content include soaking, sprouting and fermenting,¹⁴ but manufacturers of store-bought gluten-free foods generally do not process or prepare their ingredients in these ways.

Unfortunately, even avoiding high-phytate grains does not solve the problem because some of the other grain and legume options that feature prominently in gluten-free products can be loaded with other antinutrients. For example, as Chris Masterjohn has pointed out, some varieties of millet are exceptionally goitrogenic.¹⁵ Many beans also contain antinutrients well known to readers of *Wise Traditions*.¹⁶ Although cooking and processing will reduce lectins, other antinutrients will be left mostly intact.

WEIGHING RISKS AND BENEFITS

There is no doubt that some people benefit from a gluten-free diet, and some healing dietary protocols such as GAPS temporarily require it. Some people feel better when they

reduce their gluten intake. However, the number of people eating a gluten-free diet and the products being pushed as gluten-free go well beyond what is necessary. In addition, many people simply are substituting processed fake or improperly prepared gluten-free foods for processed fake or improperly prepared gluten-containing foods. The evidence is clear—such substitutions are even more problematic for our health and wellbeing than consuming gluten-containing processed foods. Even individuals who substitute more whole and less processed gluten-free grains and foods may not realize that these foods can pose substantial risks to their health and the health of their family.

Correct preparation of traditional gluten-containing grain products involves careful handling to unlock their nutritional value and minimize any problematic compounds that they contain. When properly prepared, there is clear historical evidence that gluten-containing grains are health-promoting for vast numbers of people. However, most gluten-free foods on the market are not at all like their traditionally prepared gluten-containing counterparts. By going gluten-free, people are increasing their exposure to heavy metals, herbicides such as Roundup (and its active ingredient glyphosate), and antinutrients. Far from improving long-term health, going gluten-free can endanger it. All the slick marketing in the world cannot make contaminated foods—whether gluten-containing or gluten-free—good for our bodies.

Because manufacturers use a whole array of ingredients to make gluten-free products, including a wide variety of non-wheat-based grains and starches, it is “buyer beware” in the gluten-free marketplace. Consumers can only hope that the labels are clear enough to allow them to know which ingredients may be occasionally acceptable and which ones they should avoid.

RECOMMENDATIONS


I wish the research did not show such troubling results for gluten-free foods and diets, but there is no avoiding the conclusion that going gluten-free has the potential to do great damage to one’s health if done improperly. If you have got to go gluten-free, go wisely! Here are some

Gluten-free foods, just like any and all conventionally raised foods, show high levels of contamination with industrial agricultural chemicals, and especially glyphosate (the key ingredient in Roundup).

recommendations:

1. Substitute whole foods, vegetables and fresh or dried fruit for processed or packaged gluten-free foods as much as possible.
2. Explore the value of Belgian endive as a crunchy alternative to crackers—the leaves can hold wonderful goodies like paté, homemade cheese spread and organic peanut butter.
3. In place of rice, focus on other properly prepared gluten-free whole grains such as quinoa and the right kinds of millet.¹⁵ It is acceptable to consume rice in moderation, but remember that most of the heavy metal contamination in gluten-free foods is the direct result of those foods' heavy reliance on rice-based ingredients. Limit rice to two to three servings of organic rice per week and make sure that you prepare it properly to remove as much arsenic as possible.¹⁷
4. Arrowroot starch¹⁸ and chickpea flour¹⁹ are nutritious and versatile options for gluten-free and grain-free baking.
5. Try some genuine wheat-based sourdough bread slathered with butter—you may find that it agrees with you quite well and you don't have to go 100 percent gluten-free after all.
6. Eat packaged or processed gluten-free foods only occasionally. Instead, make your own gluten-free foods, such as banana-arrowroot pancakes. (Combine one mashed banana, one egg, one tablespoon arrowroot, and 1/8 teaspoon each salt and cinnamon. Multiply by four to make a larger batch.)
7. If you purchase gluten-free products and mixes, buy organic. Testing of non-organic

gluten-free products has revealed high levels of glyphosate, which also is an indicator of possible contamination with other herbicides. Simple Mills or other WAPF-recommended brands are good options.

8. All of these warnings go double for pregnant moms and kids. Children's small body size and their developmental stage make the problems far more dangerous and damaging to their minds, bodies and biomes. 

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RICE, RICE, MAYBE?

A large proportion of gluten-free foods use rice as a primary ingredient. Unfortunately, rice is generally the most contaminated grain in terms of arsenic and some other heavy metals.¹⁷ Even worse, organic varieties offer no advantage when it comes to heavy metal contamination because the heavy metals come from past contamination of the soil and water by now-banned chemicals, rather than from any particular chemicals currently in use. Some types of rice (such as white rice and imported aromatic varieties such as jasmine and basmati) are lower in arsenic.

Fortunately, you can remove up to 80 percent of the arsenic in organic rice through proper soaking and rinsing:

- Rinse your rice and soak it for at least twelve hours before cooking.
- Cook rice with eight parts water to one part rice (i.e., eight cups of water for one cup of rice).
- Simmer gently until the rice is tender.
- Drain off the cooking water and rinse the rice again thoroughly.

Wise Traditions Podcast Interviews

INTERVIEW WITH DR. GERALD POLLACK

Hilda Labrada Gore: Dr. Gerald Pollack is a brilliant man, a professor of bioengineering at the University of Washington who got his bachelor of science from New York University and his PhD from the University of Pennsylvania. He is a well-known lecturer and author who has made some amazing discoveries about water. Gerry will tell us about the fourth phase of water and how “negative charge creates positive energy.” But first, how did you get into water?

Gerald Pollack, PhD: I immersed myself, so to speak, into water. It happened about twenty years ago. I’d been studying the contraction of muscles. If you read about muscles in textbooks or popular books, you see the proteins that bend and twist and turn and interact, and the contraction at the molecular level. It occurred to me that something was missing from this picture. What’s missing? Water. Muscle cells, like all cells of our body, are mostly water. Two-thirds of our muscle is water, by volume. The water molecule is really small, so two-thirds by volume means that you need a lot of water molecules to fill that volume. If you do the arithmetic and do a molecular count, with all the molecules lined up, more than ninety-nine out of every one hundred molecules in muscle is a water molecule. It struck me as weird that we’re trying to understand how muscles contract, but we omit more than 99 percent of the molecules that are involved.

HG: I see. We are paying attention to the muscle fiber, not the water?

GP: We are paying attention to the muscle proteins that are in the fiber and not the water, but the water is the most populous member of the family that’s there. It’s certainly possible, as textbooks assert, that the water is nothing

more than the background carrier of the more significant molecules of life. However, there is a lot of evidence that that assumption simply isn’t true. We started to think about water and the involvement of water in muscle contractions at the molecular scale, and we found the gold mine. It turns out that water is absolutely essential for everything that muscles do. It also became clear that if water plays a significant role in what happens in the muscles, it probably also plays a significant role in what happens in the nerves, kidneys, liver and in the whole being. That’s how we got started.

HG: This is the theme of your latest book?

GP: The book is called *The Fourth Phase of Water: Beyond Solid, Liquid and Vapor*. We discovered that the role of water—not only in muscles, but in everything—evolves from a different type of water. What I mean is that although we know that we are two-thirds water, that water is not the same as water in a drinking glass. It’s a different kind of water. It’s a water that builds or gets structured next to solids at interphases. It’s not just a little bit of it, it’s not just a layer of water that intersects or that meets the solids. It extends out by, up to thousands, hundreds of thousands, millions of molecular layers. There’s a lot of it. We got interested in understanding this kind of water.

HG: You have mentioned “we.” Who else is involved?

GP: I’m at the University of Washington, and I have a very active laboratory consisting of visiting scientists, postdoctoral fellows, postgraduate and graduate students—as well as numerous undergraduate students, who are actually the most creative and brightest of all. We work to-



Hilda Labrada Gore, a mother of four, has been involved with WAPF for over ten years and is the chapter leader for Washington, DC. She went to Kenya last summer on behalf of WAPF. She is the director of communications for Body & Soul, a worldwide fitness organization. She also plays the guitar and is the contemporary music leader at National Presbyterian Church.

gether as a group, and we've done many experiments. The culmination of those experiments is the discovery that water doesn't have just three phases, like we've been taught. Liquid, solid, gas—it's got a fourth one.

The fourth one is what we call "EZ water," or fourth phase water. EZ, which stands for "exclusion zone," is perhaps a misnomer, but when we first found EZ water, its most obvious property was that it tended to exclude everything, including little particles, microspheres and molecules. You might call it "pure," but "pure" is really also a misnomer. It's actually a different kind of water with a different chemical formula. It's not H_2O , it's H_3O_2 .

HG: Is EZ water the one that's in our bodies?

GP: Yes. It's the water that fills your cells. This is the kind of water that occurs at interphases with certain types of solids, in fact most solids. Your cells are filled with many solids—large macromolecules, ions and such. Next to all of these entities grows this special water. Your cells are so packed with these molecules that practically every water molecule is close enough to one of those surfaces that it qualifies as interfacial water. That's the water that is fourth phase, or EZ water, that we discovered.

I have to tell you a few things about this water. It has a couple of outstanding properties. First, while H_2O is neutral, this stuff is not neutral. It's actually negatively charged. Imagine a surface of some material and the water is sitting next to it. The molecules of water sitting next to the

surface—many layers of molecules—undergo a transformation to this fourth phase of water, which has negative charge. What's going on is that ordinary water molecules split to form negative and positive components. The negative components all line up to produce this zone we call EZ. It's got negative charge.

Beyond that, where you have ordinary H_2O , that's filled with a complementary positive charge. You have the EZ water (negative), and the ordinary water (positive)—it's a battery. We can get energy from this battery.

HG: What difference does this fourth phase of water make to us?

GP: The first thing to recognize is that you're full of fourth-phase water. What you need to understand is what builds this kind of water because this is an ordered phase of water. Building order and separating charge all require energy. Take your cell phone; your battery is running low, and you plug in to rejuvenate. Right? This is the same. In order to get a battery, like we're

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- #77 Throw off your toxic burden with Zen Honeycutt, the founder and leader of Moms Across America, a group that opposes GMOs and adjuvants in vaccines
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talking about, you have to feed it energy. There is no way you can plug this into the wall to get 120 volts or whatever. That doesn't work. We scratched our collective heads for a long time before we could figure out the source of energy. The source of energy, which helps answer your question, is light. We were flabbergasted to find that it's light that builds this phase of water.

When we speak of light, most people think of visible light. We think of that, too, but physicists use "light" to denote not only the visible part of the spectrum but also infrared, ultraviolet, and frequencies beyond those two. It turns out that the most powerful wavelength to build this kind of water is not visible light but infrared light. Now, I'm not allowing you to get a word in edgewise because this is so exciting.

HG: Where does infrared light come from?

GP: Think of the electric range or the toaster, glowing bright red, and this bright red glow is eliciting infrared light. Infrared is actually all over the place. In the room where the two of us are sitting, if we turned off all the lights and shut the window shades to make it completely dark, pitch black—where I can't see you and you can't see me—if I whip out my infrared camera, I see a beautiful image of you and of the walls and the carpet and the microphone and so on. The reason is that my infrared camera is picking up infrared radiation coming from all of that.

HG: It's like the night vision goggles that the military uses? And this infrared light is all around us?

GP: Yes, the infrared camera is like the goggles. And infrared light is all around us. You can't get rid of it. It's free energy. Some of us who studied chemistry tried to understand it and learn about so-called free energy. It was challenging. However, this is literally free. It's there all the time for the taking.

HG: This energy is facilitating what I want to happen with the fourth phase of water in my body?

GP: Exactly, it builds it. For example, let's

go back to muscles. Imagine your muscles are aching, and you've got a headache, and you're feeling depressed because of X, Y, and Z, and after you go spend twenty minutes in a sauna, you come out feeling like a million dollars. Why is that? Most people think it must be something psychological, and maybe it is. However, think about the fact that when you sit in the sauna, it's hot, and you're receiving infrared energy. That infrared energy is penetrating your body. And what is it doing to the water? It builds EZ water. You need that EZ water in your cells to function properly. You're feeling depressed, but your brain is not designed for you to feel depressed. Something is going on. When the energy comes in and builds EZ water in the neurons that fill your brain, you're back to normal and feeling okay.

HG: So, a sauna is a good idea. And what about walking on the beach?

GP: Exactly! I was going to mention it, but you beat me to it. Picture yourself walking on the beach. Why does that make you feel good, or better? Well, it could be because it's nice to do something out of the ordinary after sitting at your computer all day. However, there is a physical reason. Many people don't know this, and I didn't know this until about seven years ago. The earth has net negative charge—it's not neutral, it's negatively charged. When you contact the earth with your bare feet, all those negative charges seep into your body. You need those negative charges to build EZ water. EZ water is negatively charged, so walking on the beach will build EZ water, which will make you feel better.

HG: I've heard of this. It's called "earthing," right? Where you take your shoes off and put your feet on the ground. As children we did it more often but as adults, there is concrete and shoes that come between us and the earth. I've heard it described in connection with antioxidants. You're saying the negative charge is what our bodies need?

GP: Yes, and these all fall into the same category. Our bodies must have negative charge. In fact, it isn't widely known, but if we were to measure the electrical potential of you, relative to the earth, you're negatively charged because all your cells are negatively charged. That negative charge is critical for life. I would go so far as to say that it is one of the definitions of life. If you lose your negative charge, you're dead. You need it. You can get negative charge by earthing, which is the same as grounding. With regard to antioxidants, first think about what oxidants do—they remove negative charge. You need that negative charge in order to flourish and thrive, so antioxidants are good for you because they prevent a loss of that negative charge. You can consider earthing to be an antioxidant because instead of removing that negative charge it is doing the opposite—it is adding negative charge, which you need.

HG: If infrared light is all around us, it must be benefiting us all the time. Does that mean I don't have to do anything special to get the benefits it?

GP: No, you don't, because you are vigorous and healthy. I can see you

When the sun breaks through, people feel wonderful. You're getting the energy from this light that you may be missing.

right before me. You are getting energy from the environment. We tend to discount it, but it is always there. Plants, for example, do this all the time. Where do plants get their energy? They absorb light. The light supplies the energy for photosynthesis, and photosynthesis is chemical energy. The light is transformed into chemical energy, which is responsible for plant metabolism, growth, bending and basically everything.

The first step is the splitting of water. The creation of EZ water is exactly that—the splitting of water into negative and positive. What we've discovered is a generic form of the first step of photosynthesis. It is what plants do, and I argue that we do the same thing. We exploit energy from the environment, so you don't need to do anything. If you just sit there as a blob, you get all this energy that's coming in. Of course, you can enhance it, for example, by going into the sauna. Even ordinary sunlight has plenty of this energy. Where I live, in Seattle, it is cloudy in the winter almost every day. When the sun breaks through, people feel wonderful. You're getting the energy from this light that you may be missing.

HG: Explain to me more about what you were saying about charges and how charges attract and why that's important.

GP: It is a real paradox. I give talks pretty often because *The Fourth Phase of Water* book has become really popular. I stand up there, and I like casual talks where we can be almost conversing. Sometimes I ask the audience the following question. "If you take one negative charge, one molecule or whatever that's negatively charged from your left pocket and one that's similarly negatively charged from your right pocket, and you drop them into a glass of water, and they

are close enough that they can feel one another, and they both have the same negative charge, what happens to the distance between them?" Of course, everyone is sure of the answer, although few will raise their hands because they sense there is some kind of trick there and they don't want to expose their inability at physics. They hesitate a bit, but finally they answer, usually gesturing with their hands that the two negative charges will push one another apart. The feeling is, "Of course, everyone knows that." However, the answer is that they come together!

This is not something that we in our laboratory discovered, but we've confirmed it. It's actually been known for hundreds of years. Some of the greats in physical chemistry are the ones that saw it first. These people were puzzled. How is it possible? Everyone knows that objects of like charge repel each other, so the distance should increase—but actually it decreases. This question was taken up by physicist Richard Feynman, considered to be the Einstein of the second half of the twentieth century. Feynman was a Nobel laureate, prolific author (including author of a popular three-volume compilation of undergraduate lectures), and the hero of every physicist and all graduate students in physics, at least in the U.S. Feynman called the phenomenon that we are discussing "like likes like" because the two like charges come together and obviously must like each other if they come together. Think about people who like each other—they don't stay apart, they come together. It was kind of amusing. He said that "like likes like" because of an "intermediate of unlike."

Now what does that mean? It means that you've got these two negatively charged blobs sitting not too far from one another. In between them, positive charges gather. Those in-between

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positive charges attract the two negatives, and the negatives come together. We don't anticipate this because every scientist knows, reflexively, that if you put two like charges next to each other, they repel—but actually, they attract! This has been such an impediment in the progress of physics because of the natural presumption that two like charges go apart, when in actuality they come together.

HG: What do charges have to do with our health?

GP: We are all negatively charged. Every chemist will tell you it is impossible that anything can carry net charge but we have a lot of evidence to the contrary. People have measured our electrical potential, and the same with fruits, vegetables and plants. They are all negatively charged. Charge is really critical. Charge seems to be correlated with health, but we don't have firm evidence. If you measure individual cells—this is in the literature, people know this—a healthy, robust cell will have plenty of negative charge. If you measure the electrical potential, it might be close to 100 millivolts (mV), one tenth of a volt. However, it has been found that cancer cells, for example, instead of being -100 or -80 mV, are -15 mV. I've seen papers about pathological kidney cells that also are -10 or -15 mV instead of -80 to -100 mV. This is a real clue.

We used to do experiments sticking electrodes into cells. Typically, they might have been -80 or -90 mV. We knew that when it was going from -80 to -70, -60, -40, and so on, the cell was about to die. The more negative charge the cell has, the more negative charge you have, and the healthier you are. Think about the implications of this. What gives rise to this negative charge? The physiologist will tell you something about the membrane, pumps, channels and such. In my previous book, *Cells, Gels and the Engines of Life*, I describe the reasons why that explanation is incorrect. Now we know what is correct. What's correct is that if the cell is full of negatively charged water, then the cell itself is negatively charged. Take a container and throw in some negatively charged stuff—of course it is going to be negatively charged. No brainer.

However, if you find that the cell is not

sufficiently negatively charged, you have to say, "What's the reason for this? How come?" Think of the logic. If the negative charge comes from the water and there isn't enough negative charge, there must not be enough water. In other words, you are dehydrated. You don't have enough EZ water. That's why connecting yourself to the earth, or going into the sauna or drinking water containing negative charge are all central to your health.

HG: Does regular water have enough of a negative charge to help the EZ water itself?

GP: It doesn't help a whole lot, but all of this needs to be objectively tested. We would like to do that, but the granting agencies are not thinking along those lines. Their framework is, "Water is just water, it isn't important." Testing the health benefits of certain waters is not so interesting to them. We've tried several times, but to do a study properly, we would need several million dollars. There are so many experiments that need to be done to test and see which waters are best for your health. It's a hypothesis at this time, but I think that what you really want, at least theoretically, is water that contains a lot of EZ fourth-phase water. You can't take a glass of EZ water, that doesn't exist, but you can find water that contains some EZ fraction. We hypothesize that the higher the fraction, the better it is for your health because you are replacing the EZ water that is missing from your cells. Because the water has negative charge, it restores the negativity of your cells. You can probably also get that by earthing (grounding) or in the sauna. To digress a bit, hyperbaric oxygen therapy may also be helpful.

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We are all negatively charged. If you measure individual cells, a healthy, robust cell will have plenty of negative charge.

HG: Please say more about that.


GP: It works. A postdoctoral fellow of mine got a job with one of those hyperbaric oxygen therapy companies after he left my laboratory. He started to educate me on it. He said that hyperbaric oxygen therapy was first used by the military. People would have wounds that would not heal, no matter what they did. They put them in this hyperbaric oxygen chamber and they healed. Since then, they've found that hyperbaric oxygen is good for so many afflictions. We started scratching our heads: "Why is that?" A hypothesis is that the high oxygen and the pressure may build EZ water. We studied this in the lab and published a paper documenting that it is absolutely true. And if you build EZ water, it should improve the function of every organ in your body, at least in theory. This brings me to aspirin.

A lot of people do take aspirin. It's natural. It comes from the bark of a willow tree, I think. The list of aspirin's benefits is long. We know that if you have a headache, it takes away your headache. If you have inflammation, it reduces that. It reduces pain and can address allergic reactions. Many studies also show that it is good for your heart. Just last year, a group from Harvard reported that taking aspirin was associated with decreased breast cancer mortality in women with breast cancer. It seems that aspirin may have broad beneficial effects.

The question is, why? If you think about it, there are two possibilities. One is that aspirin has ten different mechanisms of action for ten different conditions. Alternatively, one mechanism of action may be dispersed throughout the body. We hypothesized that aspirin builds EZ water and can build EZ water everywhere, not just in your left kidney or whatever. When we tested this hypothesis in the laboratory, we confirmed that aspirin indeed builds EZ water. Our system for testing involved adding a little aspirin in the exclusion zone, or fourth-phase water. The aspirin increased the EZ water by a factor of two or three. We started testing other agents that are generally good for your health, and so far, they all build EZ water.

HG: This is so interesting. The fourth phase of water is an unusual concept for those of us who don't run in your circles. What has been the reaction among your colleagues and peers, meaning scientists, physicists, and so on?

GP: Their reaction has been surprisingly positive. I have been doing science my whole life, and I have a tendency to look into areas that may disagree with conventional thinking. My reasoning is that if you are doing research in areas where conventional thinking is okay, why bother? Instead, you might want to look into areas where there may be some difficulties or problems with conventional thinking. That said, I know very well what happens when you propose something that runs against the orthodoxy. You take hell for it, and it manifests itself in many different ways. I expected chemists and physicists to jump all over this work, but to my surprise there have been far fewer negative responses than I expected.

On the other hand, the number of people who have embraced this work is staggering. This has become so popular I almost can't believe it! I tell my wife how many emails I'm receiving from people I've never heard of. About a year ago, it was two or three new people per week, and now it's two or three new people per day. I can't handle all of the inquiries. It is gratifying though. I think there are more than eighty reviews on Amazon, and the response has been amazing. The published reviews of the book that I've seen are all glowing. What can I say? I'm really pleased with the response and the unexpected popularity of this work. 

Protect Larga Vista Family Ranch and Farm!

Please consider giving even just a little towards this fundraiser for one of the oldest and most beloved raw milk dairies in Colorado, who are long-time members of the WAPF. The fundraiser was organized by their faithful customers. The farm has come upon some hard times for reasons explained in the link below. If they are forced to sell the farm, it would be a big blow to southern Colorado and their young sons who, although still young, have shown interest in continuing the dairy.

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All Thumbs Book Reviews

The Case against Sugar

By Gary Taubes

Alfred A. Knopf

In 1934, statisticians estimated that two or three people out of every one thousand Americans had diabetes. They also estimated that those numbers had jumped 400 percent since 1900. The latest numbers from the Centers for Disease Control and Prevention are one in every seven or eight people is diabetic. However, native peoples who avoid Western civilization remain almost untouched by the disease. There aren't too many examples of people untouched by western civilization now, but the history paints a clear picture. Something went wrong in the "civilized" world, especially around the beginning of the twentieth century.

Diabetes has existed since at least the sixth century BC, so it is not exactly new, but it was generally rare before one hundred years ago. Aretaeus of Cappadocia, a first-century physician, described the disease this way: "Life is too odious and painful, the thirst is ungovernable, and the copious potations are more than equaled by the profuse urinary discharge.... If he stops for a very brief period, and leave off drinking, the mouth becomes parched, the body dry, the bowels seem on fire, he is wretched and uneasy, and soon dies, tormented with burning thirst." If the somewhat quaint language stumps you a little, I won't judge. I had to look up potations, too.

So why has this once rare disease become an epidemic? I am old enough to remember when people always referred to it as "sugar diabetes." Now why would they call it that? Gary Taubes details the evidence that seemed so clear forty or fifty years ago. Processed sugar consumption has fluctuated over the years, and deaths due to diabetes have corresponded so closely to changes in sugar consumption that it was once obvious what was going on. For ex-

ample, during World War I sugar consumption was down due to rationing and shortages. So was diabetes. In cultures where sugar consumption is low, so is diabetes.

When you look at more recent opinions, however, they seem much less certain about the root cause of diabetes. How did we go from obvious to confused? As is often the case, you can follow the money to the answer. The sugar industry has a lot of money and would like to keep it that way. Connecting sugar to the nasty disease described above would not be terribly conducive to the industry's financial goals. The industry did a good job of deflecting suspicion onto animal fat instead. In the corporate world, fat was a relatively easy, defenseless scapegoat. As far as I know, there is no such thing as a company called "ACME Fat, Inc." Fat is certainly an ingredient in many foods, but there is no industry producing pure fat as a commodity like sugar. One may argue that butter is fat, but it is not usually the only product any industry sells, and producers would never decide to label their product "Dairy Fat." There is no one industry that will defend the reputation of fat the way the sugar industry defends sugar.

The sugar industry is just part of a larger "food" industry that depends heavily on sugar, especially since manufacturers must keep fat as low as possible in those "foods." Sadly, "Coca Cola" is the second most recognized word in the world. Sugary drink producers and candy companies do a huge business that would collapse without sugar or other even more toxic modern substitutes. Even cigarettes contain sugar. It is very convenient for a lot of people to ignore the downside of sugar. This book does a good job of sorting out what the studies really say about fat and what they really say about sugar. My thumb is UP.

Review by Tim Boyd



The sugar industry has a lot of money and would like to keep it that way.

All Thumbs Book Reviews



***The Alzheimer's Antidote:
Using a Low-Carb, High-Fat Diet
to Fight Alzheimer's Disease,
Memory Loss, and Cognitive Decline***
By Amy Berger, MS, CNS, NTP
Chelsea Green Publishing

Berger presents the very reasonable theory that Alzheimer's has spread so much in the last several decades because modern brains are not getting the nutrition they need.

Alzheimer's is one of the more nightmarish diseases and it is spreading rapidly and affecting people at younger and younger ages. The medical industry has been searching for a solution but has completely failed so far. This is probably because they aren't considering the possibility that no brain is suffering from a drug deficiency. Therefore, searching for a drug-based solution is an expensive exercise in futility.

Amy Berger has looked at research into what might really be the root cause if it is not a drug deficiency. What she found is that Alzheimer's patients' brains are taking in glucose at a lower rate than normal. In other words, their brains are not getting enough fuel. Further research has shown that the brain can use fuel from either glucose or ketones, and that ketones actually work better. In many cases, it is possible to stop or even reverse Alzheimer's with ketones.

The human body can make ketones if there is no interference from insulin. That could be a problem for a lot of people for two reasons. First, most spoiled westerners don't want to give up their carbohydrate-heavy diet. Second, a lot of people are scared off by a misunderstanding of ketosis. They confuse it with ketoacidosis, a dangerous condition associated with diabetes. If

you find yourself arguing with someone about ketosis, ask them to explain the difference between ketosis and ketoacidosis. If they can't do it, invite them to go research that and get back to you when they actually know what they are talking about.

Berger presents the very reasonable theory that Alzheimer's has spread so much in the last several decades because modern brains are not getting the nutrition they need. We have been programmed to fear saturated fat and cholesterol while taking in statin drugs and antacids. Cholesterol is a key nutrient for the brain, and low cholesterol will often lead to cognitive impairment. Berger spends an entire chapter explaining this in detail. It is somewhat ironic that the cholesterol-starved brain will most likely have trouble understanding this chapter, especially if the pharmaceutical industry has trained it to believe otherwise.

In this book you will find extensive information on how to do a low-carb diet correctly, with emphasis on the importance of getting enough of the right kinds of fats. All of this information does come with a warning that low-carb is not for everyone. Coconut oil is effective at raising ketone levels even in the presence of insulin. This can be very helpful for those who can't or won't try a low-carb diet.

Berger explains the technical information in the book in a way that most people will be able to understand, and the book is well-organized. The nutrition advice (on fat and cholesterol especially) is excellent, and the thumb is UP.

Review by Tim Boyd

SHOPPING GUIDE UPDATES

1. New phone number for Fields of Athenry Farm: 703-300-5765
2. New phone number for Kettle & Fire: 415-857-0024
3. New phone number for Bare Bones Broth Company: 855-275-9899
4. New phone number for To Your Health Sprouted Flour Co: 334-584-7875

Contact Carolyn Graff at shoppingguide@westonprice.org with updates and additions to the Shopping Guide.

All Thumbs Book Reviews

***The Hungry Brain:
Outsmarting the Instincts that
Make Us Overeat***
By Stephan J. Guyenet
Flatiron Books

Why is it so hard to turn down tasty foods? Why, once we lose weight, is it so hard to stay at a lower weight? What changes in the American diet made a lean, healthy nation so rapidly change into an obese, unhealthy one?

For those who enjoyed Denise Minger's *Death by Food Pyramid*, Stephan Guyenet's *The Hungry Brain* is an enjoyable follow-up. Whereas Minger focused on changes to food and agriculture and shenanigans at the U.S. Department of Agriculture (USDA) and other places, Guyenet focuses on the science describing the impact of these changes on our brain's various food-reward and fat-regulation systems. *The Hungry Brain* then traces the influence of these changes on our ever-expanding societal waistlines and the explosion in degenerative diseases.

Chapters three through five of this book were some of my favorites, exploring the complex connections between food reward, palatability, industrial food, obesity and ill health. The three chapters are full of exceptionally interesting information, such as charts on car ownership (correlated with less physical activity), food spending allocation over time and sugar and fat consumption. One of the most troubling topics addresses the top calorie sources for US adults and children, namely processed grains, corn- and soy-fed chicken and sugar-based pseudo-foods.

These chapters highlight a few things that *Wise Traditions* readers are already familiar with, such as the rising consumption of vegetable oils and refined sweeteners (especially high fructose corn syrup) and their impact on our eating habits and health. Guyenet also adds useful information and offers a perspective on how these changes to our diet affect our brains

and eating habits in ways that most people are unaware of. Guyenet describes the transition to vegetable oils as follows: "Added fat intake has doubled. The type of fats we use in our cooking have also changed profoundly—animal fats, such as butter and lard, have largely been supplanted by refined seed oils (vegetable oils) such as soybean oil. Rather than getting our fat from whole foods like meat, dairy and nuts, we now get it primarily from oils that are mechanically and chemically extracted from seeds. These liquid oils are cheap and convenient to add to foods that would otherwise contain little fat, creating such food reward masterpieces as French fries and Doritos."

Guyenet similarly discusses sugar and its use in creating hyperpalatable, high-reward industrial pseudo-foods that wreak havoc on our brains. In fact, this is what sets *The Hungry Brain* apart. Whereas most comparable books focus on the impact of processed, industrial foods on our bodies, Guyenet is able to show how these foods derail the complex and subconscious brain systems that oversee how we relate to food.

Throughout the book, Guyenet discusses a number of traditional groups such as the Hadza, with sometimes surprising observations. For instance, many hunter-gatherer-type people are amazingly healthy in spite of diets that are almost completely devoid of low-calorie green-matter-type foods (sorry, Whole Foods and your "nutrient-dense" food grading system!). These groups also can engage in feats of feasting that modern people can barely fathom. For example, Ache men can eat "five pounds of fatty meat each in a sitting," drink "one and a half liters of pure honey," or eat "thirty wild oranges similar to the fruit we buy in the grocery store." The Hadza drink honey "like a glass of milk." Despite the fact that these groups "guzzle fat and sugar when available, neither the Hadza nor the Ache have obesity."

If chapters three through five focus on the



The top calorie sources for U.S. adults and children are processed grains, corn- and soy-fed chicken and sugar-based pseudo-foods.

All Thumbs Book Reviews

changes to the food system that make our finely tuned brain systems around food go haywire, the remainder of the book explores these problems in greater depth and detail. These chapters talk about why our brain drives us to eat even when eating no longer helps us but hurts us, covering topics such as leptin resistance, sleep, stress, the hypothalamus and the caloric value of food. These middle to later chapters of the book are an adventure through the complex systems that control expression and suppression of hunger.

One interesting thing to note is the discussion in chapter seven of the “hunger neuron” and the role of inflammation in this process. Given inflammation’s role in many chronic and degenerative diseases and its ties to processed foods, it is a reminder of just how costly cheap food can be to our health. It also reminds us how we find ourselves culturally trapped in a giant downward spiral. One can easily step onto the path toward the nutritional abyss through many roads, but it is much harder to turn back off once you have begun heading in the wrong direction.

The chapters on sleep and stress help tie together many areas of research, linking them directly to food intake and fat. Why do we crave certain types of food when we are sleep-deprived or stressed? Why is shift work so dangerous to our waistlines? (Answer: because the brain isn’t wired for it!)

The book ends with a short and helpful review chapter, taking half a dozen pages to wrap up and walk back through the big-picture ideas laid out in the earlier chapters. It then moves to action. One’s view of Guyenet’s recommendations will be driven by one’s political persuasions, but I think all of us will agree with this suggestion: “Simply change the way the government subsidies are allocated to commodity crops, such as corn, soybeans and wheat. These three food crops receive more subsidies than any others in the United States—totaling over ten billion dollars per year. They also happen to be the basis for many of our most fattening

food ingredients.... Essentially, taxpayers are subsidizing the very foods that make them sick and fat.”

The personal recommendations are simple, a reminder that at the end of the day, avoiding foods that are bad for us isn’t all that hard—except it is. It isn’t rocket science or advanced brain biology, but something both easier and harder. It is about choices to create an environment that allows us to minimize our exposure to processed foods and maximize our opportunity to consume real, whole foods.

For those who want hard science on this subject, Guyenet delivers without being overly technical. He discusses a wide variety of technical terms and studies, but at no point will a reader feel confused or lost, even as he explains and explores complex aspects of human brain function, food reward and the studies that shine light on how these work in the modern world.

I will end my review with a line from deep in the book (page 156), one that will not surprise WAPF followers but shows Dr. Price’s wisdom being proved over time. Quoting a scientist who says that “the scariest implication...is that the food we eat may cause damage in areas of the brain that we need to regulate weight loss and appetite, as well as our blood sugar, and to some degree, our reproductive health,” Guyenet adds, “To put this simply, modern industrial foods damage our brains, which in turn damage our bodies and make us even more prone to consume industrial foods. Best to never start this vicious cycle in the first place if you can.”

The Hungry Brain was an enjoyable, educational and excellent read from someone I have followed for many years. It will provide readers with a better understanding of how the human brain (and thus body) functions even in an age of hyperpalatable foods that may lead us to endless ill health. Two thumbs up.

Review by John Moody

Given inflammation’s role in many chronic and degenerative diseases, and its ties to processed foods, it is a reminder of just how costly cheap food can be to our health.

All Thumbs Book Reviews

***Mastering Stocks and Broths:
A Comprehensive Culinary Approach
Using Traditional Techniques and
No-Waste Methods***

**By Rachael S. Mamane
Chelsea Green Publishing**

Reviewing books about food and cooking is an interesting endeavor. Sometimes you are excited about a book initially, but the more you read, the more your energy wanes. Other times, a book may surprise you. Each page only serves to increase your appetite for what the author has in store (and what you might go make for dinner)!

So it was with *Mastering Stocks and Broths*. Although the book addresses a topic with which I am already quite familiar, it became the most interesting and enjoyable read of 2017 thus far. Four hundred pages long, at first I thought, “How could someone write so much about broths and stock?” I was pleasantly surprised, and for good reason; the word “mastering” in the title is entirely apt.

Mamane moves deftly back and forth

between history, science and culinary craft. The book is roughly divided into two parts. The first, shorter part explores what stock is, in all its historical and culinary diversity and glory. The second part, which represents about three-quarters of the contents, is dedicated to the application of culinary skills, covering not just the making of a multitude of broths and stocks, but also presenting a wide variety of recipes for all occasions. Almost no animal or vegetable seems to go unnoticed in the recipe section. I was delighted to see often overlooked things like rabbit or rarer vegetables like leeks and ramps make the menu. The recipe section also includes (and speaks in positive terms) of raw milk and real dairy products!

Although the application part includes recipes and techniques by the dozens and scores, marking *Mastering* as a cookbook as much as anything else, the book goes even further. In keeping with its “no-waste” subtitle, the book devotes an entire section to bone meal, dog food and charcoal. As a homesteader and farmer, I can’t help but appreciate this incredibly important and often overlooked subject. Even when



BOOK REVIEWS IN **Wise Traditions**

The Weston A. Price Foundation receives two or three books *per week*, all of course seeking a Thumbs Up review. What are the criteria we use for choosing a book to review, and for giving a Thumbs Up?

- First and foremost, we are looking for books that add to the WAPF message. Dietary advice should incorporate the WAPF guidelines while adding new insights, new discoveries and/or new therapies.
- We are especially interested in books on the fat-soluble vitamins, traditional food preparation methods and healing protocols based on the WAPF dietary principles.
- We look for consistency. If you talk about toxins in vaccines in one part of your book, but say you are not against vaccines in another part of your book, or praise fat in your text but include recipes featuring lean meat, we are unlikely to review it.
- We do not like to give Thumbs Down reviews. If we do not agree with the major tenets expounded in a book sent to us, we will just not review it. However, we feel that we have an obligation to point out the problems in influential or bestselling books that peddle misinformation, and for these we will give a negative review. We also will give a negative review to any book that misrepresents the findings of Weston A. Price.
- If you want us to review your book, please do not send it as an email attachment. Have the courtesy to send us a hard copy book or a printout of your ebook or manuscript in a coil binding.

All Thumbs Book Reviews

a stock is done simmering, its bones and other contents are not done nourishing us. They should be returned to the soil, not sent to the sink garbage disposal or waste dump. While few authors ever get this far, Mamane reminds us to close the loop, turning refuse into riches that will spring forth from the soil, nourishing the plants and animals that provide the next batch of nutritious abundance.

For anyone who wants to know the history and alchemy that go into their humble chicken stock, the first part of the book is immensely enjoyable. Mamane also does an exceptional job describing the difference between industrialized, commercial pseudo-foods and the real thing. For example, Mamane discusses the U.S. Department of Agriculture (USDA) requirements for commercial broth and stock: “The USDA requires a ratio of one hundred thirty-five parts water to only one part animal for broth manufacturers. This means that less than one ounce of meat for each gallon of water is used to make a batch of commercial broth. By contrast, the recipes in this book use four or more pounds of meaty bones for every gallon of water.”

For commercial beef stock, Mamane comments that stock “refers to a higher concentration of protein to water, about sixty-seven parts water to one part beef,” but notes that “additional ingredients—such as beef extract, beef powder, beef fat, and yeast extract—are used to enhance flavor and protein content.” Mamane concludes that “with so little meat—and no bones—used as the foundation, commercial stock requires additional substances to approximate the viscosity and nutrition seen in homemade stocks.”

It is the marriage of the historical, theoretical and practical that makes *Mastering* so much fun to read. You can be on page thirteen, skip to a matching recipe much later in the book and come back after an enjoyable meal to begin your learning journey afresh. The book also illustrates stock’s true staying power and importance, not only nutritionally but traditionally, showing why stock forms the “base” for so many dishes and cuisines. I learned about cooking techniques that I was previously unfamiliar with, and ways to incorporate stock that I never would have envisioned (along with matching recipes later in the book).

While the book is large, its organization and approach are easy to follow. It is full of short, helpful sidebars that summarize new information in easy-to-read and easy-to-remember formats. The recipes are well organized, neatly laid out and reader-friendly. Scattered throughout the book (though mainly in the latter half), the recipes also allow the reader to experience a few hundred years of cuisine, from making the original “portable soup” and “pemmican” from centuries ago to more modern dishes from across the globe.

Mamane’s emphasis on the importance of using high-quality in-

gredients—for ecological, ethical and edible reasons—is refreshing. She is able to show why obtaining good meat and bones matters, starting from the fresh pastures that feed the animals to the final bites of a meal. Such is the weight of this theme that she not only mentions it repeatedly throughout the book but also devotes an entire chapter to the topic of finding sources of high quality ingredients, including tips and questions to ask for those who are new to the issues involved in obtaining quality meats and vegetables. Mamane’s emphasis on quality even extends to her comments about water, salt and other often-overlooked cooking ingredients.

Early in the book, Mamane mentions Sally Fallon Morell’s influence on the stock and broth movement. WAPFers will be glad to see that Mamane is one of many seeking to make Sally’s dream of a “brothal” in every town come true. If only we all could have one close by that featured the level of culinary skill coupled with ecological and farm care described in *Mastering Stocks and Broths*.

A book of such immense size and scope is hard to review succinctly. As I mentioned, *Mastering Stocks and Broths* was my surprise read of 2017, one that turned duty into delight (and which will also continue to inform and improve our family’s approach to this aspect of traditional cooking). Even with my considerable knowledge about food and farming, I learned all sorts of useful things as I journeyed through *Mastering*. Two thumbs up!

Review by John Moody

All Thumbs Book Reviews

Eat Fat, Get Thin: Why the Fat We Eat Is the Key to Sustained Weight Loss and Vibrant Health
By Mark Hyman
Little, Brown and Company

Dr. Mark Hyman gladly jumps onto the fat-is-good-even-saturated-fat bandwagon with his latest book, *Eat Fat, Get Thin*. The cover photo—showing nuts, avocados, olives and vegetable oil—tells us what to expect before even cracking the book open. Hyman describes his diet as whole-food, low-carb and paleo-vegan (“pegan”), but what he really is prescribing is a semi-vegan high-fat diet with all the wrong fats. Hyman also recommends a long list of supplements, conveniently for sale on the website set up especially for this book. A fiber supplement three times a day? So much for whole food.

In the book’s acknowledgements, we discover that the recipes come not from Hyman but from a chef-nutritionist who also compiled recipes for Hyman’s 2013 book *The Daniel Plan*. The recipes feature many current food fads (cauliflower rice, raw kale salads, zucchini noodles, bulletproof coffee with coconut oil, resistant starch, smoothies with raw goitrogenic spinach and vegetable broth).

Dr. Hyman thanks Neal Barnard and Joel Fuhrman (vegans), Deepak Chopra, Jeffrey Bland, Chris Kresser (twice) and others who helped him “get the science and story right.” Despite the focus on accurate science, Hyman is confused (or confusing) when he calls palmitoleic acid (an omega-7 monounsaturated fatty acid) a saturated fat. He also misinterprets studies that he uses to argue that although saturated fats aren’t bad on the whole, a few are (mainly palmitic and stearic acid), and he points out that carbs drive the formation of these saturated fatty acids in the liver. But wait— Isn’t stearic acid the one saturated fat that experts have always rated as benign because it doesn’t raise cholesterol

levels? Hyman deems meat and eggs as acceptable (after lengthy deliberation), although they are common sources of palmitic and stearic acid.

Hyman’s comments about cholesterol are confusing. He argues that we should leave total cholesterol and LDL cholesterol tests in the twentieth century, yet he devotes a couple of pages to explaining what our numbers should be on lab tests. He states that cholesterol in older people should be higher but recommends total cholesterol under 200 mg/dL. And so on.

Lies, darned lies and statistics! Dr. Hyman gives us a little lesson in research methods, despairing at the use of food frequency questionnaires, which he perceives as worthless, although they are all we have to gauge food intake. He also notes that whereas investigators like to use the statistical measure of relative risk to grab headlines, it is not a very truthful tool to predict whether a given population will develop a particular chronic condition. Calculating absolute risk is the real game-changer in assessing risk. Hyman also discusses statistical problems such as small sample sizes, poor study design and overreliance on meta-analyses and epidemiological (observational) methods that cannot prove causation. He then turns around and relies on meta-analyses and studies that use relative risk and food frequency questionnaires.

A word of caution to individuals with health issues such as kidney stones, small intestinal bacterial overgrowth, digestive challenges or malabsorption. Before considering Hyman’s diet, please research the anti-nutrient content of the foods he recommends. Many contain medium to high levels of phytates, lectins, oxalates and trypsin inhibitors. For example, Hyman enthusiastically recommends eating nuts and seeds of all kinds in many different forms, although raw nuts and seeds are indigestible and harmful unless they have been soaked and dried before eating. Roasted nuts and seeds have high amounts of oxidized fats, *trans* fats and dena-



What Dr. Hyman really is prescribing is a semi-vegan high-fat diet with all the wrong fats.

All Thumbs Book Reviews

tured proteins. Roasted almonds, pine nuts and cashews are high in oxalates, which are often a problem for children with autism. Anti-nutrients from nuts and seeds can pass into breast milk and cause digestive distress in infants.

Almonds contain the most anti-nutrients of any nut and have an omega-6 to omega-3 ratio of almost two thousand to one, yet almonds are Hyman's go-to food, appearing in numerous recipes. These include homemade almond milk, almond milk smoothies (four recipes), almond sauces and almond pesto. A reviewer commented: "But how much almond milk can a person stand?" Another remarked that she became weary of the "weird almond concoctions." Hyman recommends getting organic raw almonds to "protect yourself from. . . contaminants," but "raw" is a misnomer. If the almonds come from California—and most do—they are either pasteurized or sprayed with a toxic chemical.

A chapter on "controversial foods"—which includes eggs, coconut oil and olive oil—provides more "good news on nuts and seeds." Hyman touts a "37 percent reduced risk of heart disease if you eat nuts," gleaned from observational studies such as the Seventh Day Adventist Health studies, the Nurses Health Study, and the Physicians Health Study.

Regarding the diet plan itself, a reviewer states: "The original 21-day plan is the minimum, and this plan is however long it takes to lose the weight you...need to lose. So your '21-day plan' might last a year or more. While on the 21-day plan, the restricted food list is very, very, very long." After completing this phase, the full "pegan" diet incorporates beans, lentils and one-half cup of non-gluten grains per day. Hyman does not include beans and grains in the initial stages because of their lectin content. (Don't nuts have lectins?)

Hyman characterizes his diet as an "elimination diet" because it initially eliminates gluten, dairy and many other foods. Unfortunately, large quantities of allergenic nuts as well as

plentiful soy may defeat the purpose of an elimination diet. At some point, Hyman allows you to add back in small amounts of gluten and dairy, depending on "how you feel," but only "from time to time."

Most of the recipes avoid dairy, instead featuring coconut milk, cashew cream, nut butters, avocado and lots of coconut oil mayonnaise. The recipes also use cashew grains, substituting coconut flour, seeds and ground nuts. For "healthy" oils, Hyman recommends a good dollop of olive oil along with sesame oil and walnut, almond and macadamia oils (which are expensive and usually rancid), although elsewhere he unjustifiably demonizes macadamia nut oil for its high palmitoleic acid content. Hyman's list of healthy fats does not include any animal fats, although the latter certainly qualify as paleo. Maybe he is worried about saturated fats after all? Butter briefly shows up in a few recipes and in the "controversial foods" chapter. There, he applauds the saturated fats in butter and compares them to saturated-fat-rich breast milk.

For proteins, Hyman recommends eggs, grass-fed meats (except pork), fatty fish and shellfish, poultry, tofu and tempeh, seeds...and nuts—two to three handfuls daily in this "nutty" diet. Hyman appears to be unaware that nuts have variable protein content (from 3 to 50 percent) along with high levels of rancidity-prone polyunsaturated fats and anti-nutrients. Eating liberal quantities of nuts also does not encourage weight loss and may lead to weight gain. Dr. Michael Eades wonders whether nuts are truly paleo. Did our ancestors consume jars of nuts, nut butters and nut oils? Hyman expresses some reservations about protein powders but provides guidelines for using them in smoothies, and he wholeheartedly endorses them in *The Daniel Plan*, selling the "right" ones on his website.

I will let reviewers on Good Reads sum up my opinion of this book:

- "The groceries alone would be cost-prohibitive, not to mention the supplements and planning. ...Would this new life you have be worth living when you literally cannot eat anything out there?"
- "In some local grocery stores, I can buy a pound of bacon and a pound of grass-fed beef for less than a pound of walnuts."
- "At some point [Hyman] switched from being an authentic-sounding doctor, to being an infomercial salesman."
- "There is no reason people need multiple bizarre supplements to be healthy nor do you have to cut out gluten and dairy if you don't have an allergy to [them]."

Would I purchase this book if I weren't reviewing it? Are you nuts? There are much more interesting books out there such as Sally Fallon Morell's new book *Nourishing Fats* and Nina Teicholz's *The Big Fat Surprise*. The thumb is DOWN for *Eat Fat, Get Thin*. ☹

Review by Sylvia Onusic

All Thumbs Book Reviews

***Just Breathe Out:
Using Your Breath to Create
a New, Healthier You***
Betsy Thomason, BA, RRT
North Loop Books

Just as the Weston A. Price Foundation has helped shift the way people look at butter and cholesterol, respiratory therapist Betsy Thomason asks us to think of breathing in a new way. Thomason explains that most of us think of breathing (if indeed we think of it at all) as sucking air in when, in fact, she says it is just the opposite. The BreathOutDynamic (BOD) system “redefines breathing as the active, spine-stretching outbreath and a passive, relaxed inbreath.” In simple terms, the book teaches you how to breathe out-in rather than in-out.

The author uses the metaphor of a fireplace bellows to explain what will happen in your lungs as you do BODs. If you push air out (squeeze the bellows) you create a vacuum and when you expand your belly (open the bellows) the air will automatically and quickly come back in. We don’t need to work at sucking air in. In fact, it wastes energy to do so. Other helpful metaphors include blowing up a balloon and blowing on a pinwheel.


Thomason explains that “most people’s breathing is rapid and shallow, leaving the body pleading to take in more oxygen and get rid of more carbon dioxide.” The “pleas” come in the form of health problems but we don’t recognize them as a cry for oxygen, or if we do we don’t know how to help ourselves. Do we simply get connected to an oxygen tank? Thomason suggests we focus on and change our breathing. Through her professional work and in her research, she has seen that this system offers improvements in energy, pain management, athletic performance and overall health.

The author’s metaphors and simple how-to chapter make BODs easy to learn and start right away. I was able to do BODs in only a few minutes after reading just part of the book—which is great for busy people who want to do something effective for their health without a huge investment of time. I found the simplicity and brevity attractive with one exception—why are we just learning this now and have we been breathing wrong since humans took their first breath? She only mentions briefly the fact that the method was developed by Ian Jackson, an Olympic cycling coach, although ancient yogis knew this method but only told a few. Even infants breathe this way when they are first born, but later lose it.

In every other regard I liked the concise, clear explanation and format of the book. Thomason seems to have anticipated the many questions a reader would have and answered them with enough of the research, anecdotal evidence and practical explanations (including drawings) to make it convincing to try and succeed at doing BODs. Even if done only a few minutes a day, it is helpful. As the author explains, “BODs maximize well-being because every cell in your body relies on the oxygen you breathe for its existence and intelligence, and because breathing efficiency equals effectiveness.” My pinwheel and thumb are up—and my breath is out for this book!

Review by Kathy Kramer

DROWNING IN 8 GLASSES: 7 MYTHS ABOUT WATER REVEALED by Adrienne Hew, CN: Did you know that too much water can make you go into a coma? That there is no science behind the recommendation to drink eight eight-ounce glasses of water per day? That too much water can result in reduced intracellular hydration? That pasteurized milk, alcohol, coffee and tea can accelerate tissue water loss? That animal fats keep your skin hydrated and wrinkle-free while too much water can dry out your skin and accelerate wrinkles. Adrienne Hew has compiled these and many other interesting facts about water in this important booklet. She also provides a plan for providing the body with the water it needs in the most effective way, starting each morning with a glass of warm water containing a pinch of salt. Thumbs Up.

PREGNANCY AND FLUORIDE DO NOT MIX: PRÉNATAL FLUORIDE AND PREMATURE BIRTH, PREECLAMPSIA, AUTISM by John D. MacArthur: Exposure of the fetus to fluoride (mostly from fluoridated water) is associated with many harmful effects including damage to red blood cells, low birth weight and premature birth, cognitive problems and autism, obesity, iron-deficiency anemia, disruption of gut flora, thyroid disorders, hyperactivity, preeclampsia, and placental and vascular calcification. MacArthur has compiled a long list of references to back up his urgent warning: pregnant women should avoid all exposure to fluoride in water and drugs. Thumbs Up. 

Food Feature

MY KOMBUCHA JOURNEY: I LOVE KOMBUCHA...NOW!

By Elaine Michaels

The first time I tasted kombucha was some years ago at a Weston A. Price Foundation conference, where one of the vendors was offering samples. One sip of a promising-looking sample was as far as I got. Although other flavors were available to taste, I could not bring myself to try even one more. I walked away with a funny look on my face, thinking, “Maybe this is a healthy drink, but I sure don’t like it.” In the years since that first awkward encounter, however, I have learned some simple lessons. Now not only do I enjoy drinking kombucha, but I also make it.

CURIOSITY ABOUT FERMENTATION

I have always been an advocate of real food. I ate and cooked from scratch for a good part of my life. Because I raised my children on acreage, eating real food on a daily basis, I have spent a lot of time experimenting with different ways of doing things. When I became an advocate of the Weston A. Price Foundation and its philosophies, I discovered and became interested in fermenting foods.

For my first fermentation project, I tackled making sauerkraut. Our garden was one-hundred-by-one-hundred feet, and what else do you do with a one-hundred-foot row of cabbage?! After making the sauerkraut, I left it to ferment in a huge crock in my basement. At the time, I also was learning how to can foods and was extremely careful about my canning methods. I had read about the deadly dangers of botulism and knew that it was important to follow canning directions exactly. When I checked on my fermenting sauerkraut and saw a layer of white film on top, I was a little unsettled. To be safe, I canned my sauerkraut after it had fermented, not realizing that canning killed all the beneficial bacteria that the fermentation process had encouraged!

Fast forward a few years. Fermentation was still on my mind periodically, but I didn’t have

a clue how to do it safely. When a Weston A. Price Foundation chapter leader told me about a weekend-long fermentation class and certification opportunity offered by Immunitrition in Chicago, I was intrigued. I knew that I could probably get my questions about fermentation answered if I took the course—so off I went. I remember watching the teacher talk while gallons of milk sat out on the counter. Although I initially was a little uncomfortable looking at those unrefrigerated jugs of milk, I soon became confident that the instructor knew what she was doing. At the close of that wonderful long weekend, I became a Certified Healing Foods Specialist, and when I got home, I immediately put what I had learned into practice. I have been experimenting with and perfecting my fermentation techniques ever since.

Around that time, I read an article by Dr. Fred Breidt, a microbiologist and fermentation expert at the U.S. Department of Agriculture (USDA). In the article, Breidt assured readers that he knew of *not one* sickness caused by properly fermented foods. Breidt describes vegetable fermentation as “almost bulletproof” due to the ability of lactic acid (formed during fermentation) “to hunt down and kill any harmful bacteria that might be present.”¹ Breidt’s comments seemed both amazing and unreal, given how frequently one hears about food contamination involving unfermented foods.

GIVING KOMBUCHA ANOTHER TRY

As time passed, I read more about kombucha, learning that kombucha contains various strains of beneficial bacteria and yeasts. (I now call these “good germies.”) I became determined to find a variety of kombucha that I liked. I noticed that our local grocery store had a few brands, but I also saw that these were not cheap. I was determined to find a kombucha that I liked however so I bought a few. Most of them did not impress

Kombucha
contains
various strains
of beneficial
bacteria and
yeasts.

me—but there was one brand and one flavor that I did like. This intrigued me, but the price tag still did not. I began contemplating how to make kombucha less expensively at home.

As with any ferment, I went through a period of trial-and-error before my beverage began to turn out the way I wanted. Since then, I have had people tell me that my kombucha is the best they have ever tasted (and I have also had people even refuse to take a taste).

Although I have been a real food advocate throughout my life, for a long time I held on to one bad habit—Diet Pepsi. (My stepmother initiated me into the “Pepsi club” when I was a teenager, encouraging me to indulge in a Pepsi as a treat after cleaning her house.) For years, I justified the habit by saying that it was my “one daily vice.” After my transition to kombucha, however, I easily left my Pepsi habit behind because kombucha’s flavor and carbonation, coupled with its healthy ingredients, far surpassed anything I had ever experienced when drinking Pepsi. Out of curiosity, I recently tried Pepsi again and it tasted awful—it was very syrupy and burned my throat!

MAKING KOMBUCHA

Although I describe my process for making kombucha, there is no “one right way.” Have fun experimenting until you produce kombucha that is to your own and your family’s liking. I tell my clients to pick a “kombucha-making day” of the week. My day for fermenting is Sunday; on Sundays, I make not just kombucha but also kefir and vegetable ferments.

Kombucha requires four basic ingredients: a SCOBY (symbiotic colony of bacteria and yeast); tea; sugar; and water. I got my first SCOBY from a friend. If you ask around, you will find one, or you can call your closest Weston A. Price Foundation chapter leader. (The back of the *Wise Traditions* magazine lists chapter leaders

by state, or you can look on the Foundation’s website under “Find a Local Chapter.”)

When you get your SCOBY, it should be floating in a little of its own kombucha. As you continue brewing kombucha over time, the SCOBY will grow and gain smaller “babies.” Eventually I get rid of (or give away) the older ones. You do not want to brew kombucha with too many SCOBYs because that will overwhelm the sugar and give it too much to feed. My SCOBYs have acquired a brownish tinge over time because of the tea, but this does not mean anything. When you see little pieces or strands in your kombucha, know that these are beneficial bacteria and yeast!

I usually use organic tea to make kombucha, at least half of which should be black tea. I either use tea bags or add the right amount of loose tea to a tea ball (one bag = one teaspoon). Do not use herbal teas.

When purchasing sugar, it is important to know that any sugar that does not say “cane sugar” on the package is probably beet sugar, and beet sugar is likely to

be genetically modified (GMO). However, you should also be cautious about using non-organic refined cane sugars such as C&H, which often have been sprayed with glyphosate (the active ingredient in Roundup). In fact, conventional agricultural specialists tout glyphosate as a highly effective “chemical ripener” that speeds up sugarcane’s ripening process and increases the sugar-to-fiber ratio.² (These days, unfortunately, it is impossible to rule out the possibility that even organic cane sugar may be contaminated with glyphosate.³)

If you are using tap water to make your kombucha, consider investing in a water filter. I have a filter on my sink that takes out the chlorine. If you do not have a filter and are using tap water, let the water sit out for a minimum of an hour and preferably overnight to dissipate the chlorine.

Bad food habits can be left behind. It may be a gradual process, but when it happens, you will experience the joys of a healthier life.



RECIPE

Ingredients:

- 1 kombucha SCOBY in 1 cup of kombucha
- 4 teabags (or 4 teaspoons loose tea)
- 1 cup cane sugar (preferably GMO- and glyphosate-free)
- 3 quarts filtered water (or tap water that has sat out)

Equipment:

- Two one-gallon jars (don't use "spouted" jars because the little strands will clog the spout)
- A small strainer (non-metal is preferable)
- A funnel
- An unbleached coffee filter and/or a piece of cheesecloth (I prefer unbleached filters because I want to be as chemical-free as possible)
- Bottles or jars: Grolsch-style flip-top bottles are nice (available online at Cultures for Health), or you can use quart-size mason jars—but these will not produce the same fizz.

Week One:

Bring the water to a boil (twenty minutes). Add the sugar, stir and turn off the heat. Add the teabags or tea ball and let the tea steep for ten minutes. (Set a timer to avoid steeping it for too long.)

Remove the teabags or tea ball. Cool to room temperature, which will take at least a couple of hours.

Pour the cooled tea through a strainer into a gallon jar that contains the SCOBY and one cup of the kombucha in which you are storing the SCOBY. Cover with an unbleached coffee filter and/or the cheesecloth with a rubber band. (I actually double-cover my kombucha with both the filter and cheesecloth.)

Let sit in a warmish area for one week. If it is winter and you keep your house on the cool side, your kombucha may need a temperature boost. I keep mine on a heating pad on a cookie sheet all winter, which works well.

Week Two:

After one week, I do not feel that the kombucha is strong, flavored or carbonated enough,

so I do a second ferment. I like the delightful carbonation that results from a second ferment, and I like to experiment with different flavors.

Pour the kombucha into flip-top bottles (typically three) or mason jars, using a strainer over a funnel. Add a few pieces of fresh or frozen fruit of your choice. Because I'm a frugal person, I use the core of a fresh pineapple (cut up in small pieces and frozen) for my pineapple kombucha. I also make blueberry and raspberry flavors. I take the fruit right out of the freezer and place it in the bottles. Tighten the tops or jar lids and let the bottles or jars sit out for another week.

Meanwhile, transfer the SCOBY and one cup of kombucha into another gallon jar. Start the whole process over again. You will now have several bottles of kombucha undergoing a secondary ferment while a new gallon of kombucha is brewing.

Week Three:

Refrigerate the bottles after a week (or "to taste"). Open bottles only after they have been refrigerated. Kombucha can be wonderfully fizzy, but you may want to open the bottles over a bowl or the sink so that you do not lose any or end up with a mess to clean up! Meanwhile, proceed as specified for week two, bottling one batch and starting a new batch.

MY EIGHT KOMBUCHA LESSONS

1. Just because you do not like one flavor of kombucha does not mean that you will not like other flavors.
2. If you are going to sample store-bought kombucha, remember that each brand is different, as is each flavor in the brand's product line.
3. Keep reading about and studying the old ways of food preservation.
4. When thinking about food safety, remember that our ancestors thrived even in the absence of refrigeration.
5. Do not expect to love kombucha the very first time you try it. You may have to search for your favorite flavor but do not give up. The benefits are too great.
6. Bad food habits can be left behind. It may be a gradual process, but when it happens you will experience the joys of a healthier life.
7. Experiment! Get the kids involved and have fun.
8. Keep an open mind—I've come a long way and so can you! ☯

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Legislative Updates

DÉJÀ VU—IS ANIMAL ID MAKING A RETURN?

By Judith McGeary, Esq.

Twelve years ago, American farmers started to hear about a federal program called the National Animal Identification System (NAIS). The U.S. Department of Agriculture (USDA) documents called for every person who owned even one livestock or poultry animal to register his or her property, individually identify each animal (in most cases with electronic ID like microchips or radio-frequency identification [RFID] tags), and report their movements to a database. At first, many people didn't pay much attention, some because the program was labeled as "voluntary at the federal level" and others because it seemed too absurd to be taken seriously.

And then we took a closer look. The paper trail revealed a decade of planning by agribusiness groups. They had developed the plan for an international system of tracking animals in order to grease the wheels for exports and im-

ports. The goal was to throw open the border so that when there was a disease outbreak in a country they could claim that they could safely continue exports because they could supposedly guarantee that the exported animals or meat had not had any contact with sick animals. The huge market for RFID tags and database management meant that technology companies eagerly joined the push for this massive program.

The agribusiness interests that had developed the program had included provisions for group ID for animals that were owned by the same entity, and not commingled with others, from birth to death. The way it was written, the vertically integrated meat packers—companies like Tyson and Cargill who control every stage of production in poultry and swine operations—would face minimal costs. And the vast differences between the costs of individual ID for independent producers and group ID for such

Judith McGeary is the Austin, Texas, chapter leader, an attorney and small farmer, and the executive director of the Farm and Ranch Freedom Alliance. She has a B.S. in biology from Stanford University and a J.D. from the University of Texas at Austin. She and her husband run a small grass-based farm with sheep, cattle, horses, and poultry. For more information, go to farmandranchfreedom.org or call (254) 697-2661.

ACTION ITEM

In addition to the public meetings, USDA is accepting written comments. You can submit them online at <https://www.regulations.gov/comment?D=APHIS-2017-0016-0001> until July 31 at midnight.

SAMPLE COMMENT FOR CONSUMERS: Extensive new animal ID requirements could have significant impacts on our agricultural and food system.

I buy my food from small farmers who would be particularly hard-hit by the cost and burdens associated with electronic ID. I do not want to see the farmers who provide food for my family and me burdened by requirements for the benefit of those who are exporting to other countries. A local food system is vital to our health, economy and food security, and I urge USDA to prioritize the needs of small farmers.

SAMPLE COMMENT FOR PRODUCERS: Any action by USDA should be limited to the question of whether young cattle should be required to be identified when crossing state lines. That is the issue that USDA committed to reviewing when it adopted ADT just a few years ago.

(Add any comments or experience you have with animal ID requirements. Have you shipped cattle or poultry across state lines? Have you been involved with a traceback? What would be the impact on you if young cattle [under 18 months] had to have individual identification? What would be the impact if electronic ID were required? If you live in Michigan, which already requires electronic ID, what have been the impacts?)

Yet again, the proponents of animal ID dismissed the concerns of small scale producers, going so far as to say that if they couldn't comply with such a system, they should get out of the business.

operations would inevitably drive many small farmers and independent ranchers out of business, leading to the consolidation of the beef industry and the loss of the burgeoning sustainable livestock movement.

For consumers in general, this would have meant a significant loss of options. For WAPF consumers, who emphasize nutrient-dense animal foods, it would have been a disaster.

When small farmers and their consumer allies became aware of this plan in 2006, we were already far behind the curve. Despite claims that the program would be “voluntary at the federal level,” USDA’s documents laid out the method for making the program mandatory on every livestock owner in the country by January 2009, and the momentum was all on the side of agribusiness.

But as activists spread the word, USDA faced a firestorm of protests from organic farmers, independent ranchers, horse owners, property rights advocates and others. Thanks to the organized grassroots outcry, then-Secretary Vilsack withdrew the plans for NAIS in 2010. At the same time, he announced plans for a replacement program, to be called the Animal Disease Traceability (ADT) program. We spent

the next two years fighting to ensure that USDA kept its commitment to make ADT a reasonable, cost-effective plan.

In 2012, USDA issued the ADT rule. It covered inter-state movements only, requiring that cattle and poultry that crossed state lines be identified. Traditional, low-tech forms of ID were expressly allowed, and several exemptions that we had fought for were included.

Among other things, the final ADT rule dropped the proposed requirements for “feeder cattle”—beef cattle younger than eighteen months of age. The USDA explicitly stated that it would revisit the issue of feeder cattle in the future, allowing a focused discussion on the specific problems posed by identifying younger animals in a separate discussion.

So when USDA posted a notice for a series of meetings to discuss ADT this spring, it was not a major surprise—we had known that sooner or later there would be a discussion about feeder cattle.

Then, a week before the first meeting, USDA posted the supporting documents. The meeting handout hinted that the underlying agenda is to begin pushing intra-state requirements and electronic forms of identification

UPDATE ON THE NEW ADMINISTRATION

President Trump’s nominee to lead the FDA, Scott Gottlieb, was confirmed by the Senate in May. While Dr. Gottlieb was a clinical assistant professor at New York University School of Medicine and has several years of prior experience at FDA, his main work has been with pharmaceutical companies and in the venture capital world. He is a venture partner at New Enterprise Associates, a director at Tolero Pharmaceuticals, and a member of GlaxoSmithKline’s product investment board. Gottlieb’s financial disclosure letter during the nominations process disclosed financial relationships with over twenty-five entities, many of them giants in the biotech and pharmaceutical industries.

As predicted based on the Presidents’ list of likely candidates to lead the FDA, Gottlieb is a supporter of measures to allow companies to bring drugs to market much faster. This might open the door for more innovative alternative therapies—but only if the costs of FDA approval are drastically reduced in the process.

On the food side, we know very little about Gottlieb’s views, just what came out during the confirmation process. In response to questions from the Senate committee, Gottlieb stated: “The Food Safety Modernization Act (FSMA) provides FDA with important tools and authorities to support its responsibility to ensure the safety of our nation’s food supply. If confirmed, I will work to ensure the agency has the appropriate policies, processes, and resources in place to implement FSMA, as intended by Congress. FDA should implement FSMA in a way that protects and promotes public health by enhancing food safety, while also collaborating with the U.S. Department of Agriculture, state officials, and other government agencies to conduct regulatory activities in a manner that takes into account the unique challenges faced by small farmers and small businesses.”

One of the Big Food industry’s top priorities is to delay until 2021 new nutrition labeling requirements that were due to take effect this year. The excuse is that the USDA will be requiring GMO labeling in 2021 (although it will likely be of little use to consumers, since the DARK Act included so many loopholes). Big Food claims that changing labels twice in four years would be too confusing for consumers. Gottlieb has indicated that he is open to the idea, and the agency already temporarily delayed the rules during his confirmation process.

again—in other words, a NAIS-type system. See aphis.usda.gov/aphis/ourfocus/animal-health/traceability/adt-meeting-information (see pages 9 and 10 of the handout).

Reports coming from the first meeting in Oklahoma City confirmed these fears. Reading the attendees' accounts was like a flashback to the NAIS debates—all the same arguments about the export market, agency failures in tracing animals, and scare tactics about disease (but with no explanation as to how electronic ID solves disease problems). And, yet again, the proponents of animal ID dismissed the concerns of small-scale producers, going so far as to say that if they couldn't comply with such a system, they should get out of the business.

WAPF and other groups have quickly gone to work to oppose this attempt to revive NAIS. Even USDA officials acknowledge that the feedback it has received so far at the meetings has been strongly against any expansion of the ADT program.

Why are we so concerned? The idea of a comprehensive animal ID program may sound good. But consider the following:

- It's too expensive. The profit margins for most livestock producers are tiny. A NAIS-type program means not only buying RFID tags (which are more expensive than the traditional metal or plastic ones), but having the infrastructure to place the tags properly, read them and manage the data.

- The program doesn't address animal disease. Traceability is part of the program to control and limit the spread of disease—but it does nothing that actually addresses disease. The real focus needs to be on prevention. If the government and industry spent even a fraction of the time that they have spent on NAIS addressing overcrowding in feedlots, poor nutrition and the overuse of drugs, and preventing imports from countries with outbreaks, we would have far healthier animals and less risk of disease in this country. But those things cost the industry money and limit their international markets, so they'd rather focus on tagging and tracking animals.
- It's about money. The real reason the industry players want electronic ID and tracking is to boost their own profits. The first time around, it was about exports to South Korea and Japan—because with a 100 percent traceability program exporters have greater leverage to claim that countries must open their borders to our products. This time, they're talking about exporting to China. Not to mention the profits to be had from selling tens of millions of electronic tags, or from managing the massive databases that would be part of the system. Multiple companies and trade organizations stand to make a lot of money from the program—at the expense of the vast majority of farmers and ranchers.

We don't need every animal to have an electronic tag in its ear and its information entered in a database. What we need are programs that support independent producers, a vibrant competitive market and healthy animal management to prevent disease. Unfortunately, it appears that we will have to fight this battle all over again. Fortunately, this time we have been tracking this issue vigilantly and are on top of it from the beginning.



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A Campaign for *Real Milk*

RAW MILK VENDING MACHINE SALES SOAR ON THE WORLD MARKET—RAW MILK DEVOTEES TAKE NOTE!

By Sylvia P. Onusic, PhD, CNS, LDN

The raw milk movement has turned into a revolution. Over the past ten to fifteen years, more and more moms have discovered the nutritional and taste value of buying real milk for their families, and more farmers are realizing that real milk adds value to their business. The raw milk renaissance has been supported by the promotion and education efforts of the Weston A. Price Foundation and its Campaign for Real Milk at realmilk.com.

In the mid-1940s, fictional articles appeared in *Coronet* magazine (May 1945) and *Reader's Digest* (August 1946), describing the non-existent town of Crossroads where many individuals supposedly were dying from undulant fever as a result of drinking raw milk.¹ Ever since the publication of these and other fabricated stories, the U.S. Food and Drug Administration (FDA),² the Centers for Disease Control and Prevention³ and other government agencies have continued to beat the same sorry drum, warning consumers that raw dairy products are hazardous. Consumers, fueled by these government reports, have feared the dangers of raw milk.

This legacy of fear-mongering, combined with the lowfat lipid hypothesis of heart disease and the growth of industrial dairies, has produced a vast array of highly processed, pasteurized, ultrapasteurized and homogenized versions of milk. Containing varying amounts of fat, these products are tasteless and devoid of the rich nutrients that are the hallmark of milk from pastured animals.

In the U.S., only a few states such as Pennsylvania and California allow retail sales of raw milk. The sale of raw milk for human consumption is completely illegal in sixteen states. In other states, consumers who go to some effort can obtain raw milk on the farm, through herdshares or cowshares or as pet food.⁴

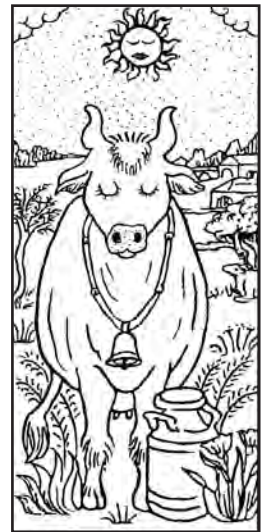
The restriction on food freedoms in North

America has been accompanied by increasingly desperate enforcement of government food laws by U.S. and Canadian officials who use police to invade small farms and arrest farmers who produce raw milk. For example, the FDA carried out an early-morning armed raid on the farm of Dan Allgyer, an Amish farmer in Pennsylvania, because he violated the agency's ban on interstate raw milk sales. The raid put Allgyer out of business. None of Allgyer's out-of-state customers, who had sought out his dairy products with full awareness that they were unpasteurized, had ever alleged that the milk had made them sick.⁵

A NEW SALES MODEL

Europeans have long valued raw milk as a traditional food that serves as the basis for many cheeses and other related products.⁶ Most European countries permit the sale of raw milk. Moreover, European officials have done the opposite of their counterparts in the U.S. by allowing expanded distribution of raw milk through self-service consumer vending machines.^{7,8} The vending machines give consumers easy access to raw milk at convenient locations in shopping centers and at farmers markets as well as near schools and playgrounds. The machines also provide added value to farmers, who can increase their market and sell their milk safely, hygienically and with confidence. In these countries, pasteurized forms of milk are also available, including sterilized milk sold in cardboard boxes, which do not require refrigeration.

I discovered my first raw milk vending machine (*mlekomat*) in 2009 at the main farmers market in the capital city of Ljubljana, Slovenia.⁹ The machine was a marvel—simple and so easy to use that a child could operate it. The design was also flexible, with many built-in features to accommodate the wants of the consumer.



A Campaign for *Real Milk* is a project of the Weston A. Price Foundation. To obtain some of our informative *Real Milk* brochures, contact the Foundation at (202) 363-4394. Check out our website, RealMilk.com for additional information and sources of *Real Milk* products.

Raw milk vending machines are operating safely in many European countries. There are more than one thousand raw milk machines in Italy alone.

The major focus was on safety of the milk and maintenance of hygienic conditions before and after dispensing it. If I had to guess, I would bet that a mom designed it!

After payment, the machine dispenses the milk into a glass or plastic container that the consumer can purchase on site (or into the consumer's personal container). Once the machine has dispensed the milk, an ultraviolet light sanitizes the surface. There are usually paper towels nearby to wipe up any drips. One liter (about a quart) of fresh raw cow's milk is available for about one euro (\$1.12 US). A consumer can purchase an unlimited amount of milk.

The vending machines only allow sale of raw milk over a twenty-four-hour period, at which point a new batch must replace the previous batch. If the temperature of the storage unit changes, the farmers receive a message on their cell phone. In fact, a farmer can check the status of the milk machine at any time through a cell phone app. Inspectors also have easy key card access to the inner workings of the vending machines at any time.⁸ Farmers own and maintain the machines, cutting out middlemen. Farmers can post information on websites letting the public know about the locations of their vending machines, but consumers also can easily find them in areas where they already shop and consume food. There have been no confirmed reports of illness caused by the raw milk purchased at these machines from government officials or members of the public.¹⁰

A WORLDWIDE TREND

As an American who is aware of the restrictions and force applied by the U.S. government to prohibit the sale of raw milk, it was almost unbelievable to observe vending machines dispensing milk for customer after customer in Slovenia. I began to wonder about the extent to which raw milk was permitted elsewhere in Europe. After doing some research, I found that raw milk vending machines are operating safely in many European countries. For example, there are more than one thousand raw milk machines in Italy alone, including in Sardinia and Sicily.¹¹ When blogger Sarah Pope and her family traveled to Italy, she observed that raw milk vending machines were stationed near schools.¹²

In addition to Italy and Slovenia, consumers can find raw milk machines in Austria, Croatia, the Czech Republic, Denmark, France, Germany, Greece, Ireland, Lithuania, The Netherlands, Poland, Romania, Serbia, Slovakia, the United Kingdom and more. Spain and Norway restrict the sale of raw milk at present, but it looks like they may ease regulations to permit vending machines.⁸

Since seeing that first *mlekomat*, sales and use of raw milk vending machines have increased to such an extent that they generate yearly marketing reports and forecasts in the millions of dollars. The popularity of raw milk machines has even spread beyond Europe to India and elsewhere in Asia, Africa, New Zealand and elsewhere.^{8,13}

INCOME FOR FARMERS

The European Union originally imposed raw milk quotas on farmers but recently discontinued them, which prompted an increase in milk production in many countries, accompanied by falling prices. These factors, along with rising consumer awareness of raw milk as a natural food, actually created the conditions that have allowed raw milk vending machine sales to skyrocket.⁸ In fact, the machines handily offered a solution for what might otherwise have become an unpleasant political situation for European officials. As farmers eagerly embrace this strategy for marketing their milk, governments too have welcomed vending machine sales, sometimes attending events that put new machines into service and even drinking the milk themselves.¹⁴⁻¹⁵ Dairy farmers who also produce traditional raw milk cheeses, butter-milk, yogurt and chocolate milk are looking to vending machines as potential sales outlets for those products as well.⁸

A 2016 marketing research report estimated that the European raw milk vending machine market was worth U.S. \$6.45 million in 2015 and will reach U.S. \$17.97 million by 2024.⁸ During the forecast period from 2016 to 2024, the market is expected to surge at a compound annual growth rate of 12.5 percent. The report predicts that sales in Eastern European countries will rise by 9 percent over the same eight-year period. The report also covers market growth in

China, Japan, Southeast Asia and India.⁸ Additionally, the report analyzes factors that are driving growth of raw milk vending machines in each region; assesses market trends, growth opportunities and strategies to increase raw milk popularity; and examines market share and competitive strategies adopted by producers in the European raw milk market.⁸

There are three leading raw milk vending machine producers (DF Italia, Brunimat GmbH and ProMeteA SRL), which make up 87 percent of the market. As raw milk continues to grow in popularity, however, vending machine manufacturers are joining the game in India, China and other countries.¹⁶ This competition among producers has led to top-notch vending machines with improved ergonomics and new designs with even better sanitation and slots for products such as cheese, buttermilk, yogurt, chocolate milk and ice cream. In Slovenia, I witnessed

farmers using such machines to sell non-dairy products such as wine and olive oil directly to consumers. The sale of vegetables through vending machines may also prove to be a lucrative business opportunity.⁸

REACTIONS BACK HOME

When I returned to the U.S. after my first sighting of a raw milk vending machine, I wrote several blog posts about the machines.⁹ Americans and other readers posted generally positive comments. Interest in the U.S. intensified after I spoke about the vending machines

RAW MILK VENDING MACHINES IN NEW ZEALAND

In New Zealand, according to a raw milk dairy called Village Milk, “enthusiasm for real milk has been growing” by leaps and bounds.¹³ The company’s website notes that “people love the taste, the health benefits and supporting their local farmer.” Village Milk sells raw milk and helps other farmers who wish to produce “the best, highest quality raw drinking milk possible,” including providing advice on using dispensing machines.

There are more than sixty raw milk producers in New Zealand, and the number continues to grow.³¹ Until last year, New Zealand’s dairy farmers could sell raw milk under a fifty-year-old law that allowed remote and rural customers to buy milk from their local farmer.³² Unfortunately, new regulations were introduced in March 2016 that could endanger smaller-scale raw milk producers.³¹ Under the new regulations,³³ raw milk producers must file and pay for reports from a dairy assessor, complete various application forms and furnish documentation from a food quality standards agency.³¹ Dairy farmer Tim Jopson, who supplies three hundred customers with raw milk from a vending machine, estimates that his current administrative costs will more than double to ensure compliance with the regulations.³¹ According to Jopson, a dairy would need to produce at least six thousand liters annually to cover the cost, and this will be “the death of the cottage industry-style suppliers with less than six cows who rely solely on their raw milk sales income.”³¹ On the other hand, the new rules will allow for home delivery of fresh milk and remove an existing five-liter limit per customer. The chairman of the Raw Milk Producers Association of New Zealand, Ray Ridings, mostly supports the new regulations but believes that the regulators overstepped their bounds by eliminating collection points that have expanded consumer access.³⁴ Ridings nonetheless states, “It’s important our industry has some regulations because the danger of having cowboys selling raw milk puts everyone at risk—both consumers and responsible producers.”³⁴

A number of New Zealand farmers are using vending machines to sell raw milk. For example:

- Village Milk, owned by Mark Houston in Golden Bay, has on-farm sales of up to three hundred liters of raw milk a day from the farm’s raw milk vending machines. Houston reports that he has never had a “health scare” in four years of operation.³² The dairy’s website offers consumers recipes for mozzarella cheese, kefir, homemade butter, yogurt, milk punch and smoothies.¹³
- Carl and Jeannette Storey from Whitianga are “living their dream” operating a small “boutique operation” with a planned herd size of thirty Ayrshire cows. They purchased a raw milk vending machine to sell their milk. They also foresee selling soft cheese, yogurt and fresh fruit ice cream.³⁵
- Pete and Margaret Dalziel of certified organic Dolly’s Milk in New Plymouth produce raw milk (“straight from the teat”) from their large herd of Friesian-Jersey crosses. They also distribute vending machines manufactured in the Czech Republic. With a “Dolly’s card,” consumers can purchase milk at a cheaper price.³⁶
- In Christchurch, farmer Mark Williams sells fifty liters a day of Aylesbury Creamery milk from his herd of ten cows. He has been so successful that he plans to double his herd.³⁷
- Jersey Girl Organics at Cleavedale Farms in Matamata sells milk (“straight from our herd to you”) that is pasteurized but not homogenized. The Jersey herd grazes on organic pasture. Jersey Girl Organics maintains dispensing machines in two locations and also sells their milk in a variety of retail outlets.³⁸

Raw milk farm tourism has caught on in New Zealand as well. Breakfast at the Organic Dairy Farm BnB, located in Mangawhai in the Northland (featured on Booking.com), includes raw milk, yogurt and butter.³⁹

In all, almost one hundred and fifty farms are selling raw milk in the UK and Ireland.

at the Second Annual International Raw Milk Symposium in April 2010.¹⁵ Reporters who attended the conference wrote about the machines. Many people asked me the same two questions: “How do we get the machines?” and “Would they work in the US?”

When I returned to Slovenia the following summer, I met with an Italian producer who was willing to change out the electricals in his model of the vending machine to meet the one-hundred-and-ten-volt standards needed for operation in the US. He even offered to send a raw milk machine for use at the WAPF conference being hosted in Pennsylvania that year. After more sleuthing, however, I found that the machine definitely would not clear U.S. customs.

As far as trying to obtain approval to sell raw milk via vending machine in my home state of Pennsylvania, where raw milk is legal, officials at the Pennsylvania Department of Agriculture strongly discouraged me from embarking on such an enterprise. A female veterinarian who worked at the Agriculture Department told me it would be a grueling bureaucratic process and said that they would never approve vending machines because there was no way to police them. Even after I explained how farmers could track their machines via a special iPhone app and stated that inspectors could gain access to the machine at any time with an entry key, the idea seemed unfathomable to her.

As a result, no American farmers thus far have been successful in bringing vending machines to America. It would be a Herculean task to surmount all the obstacles and barriers that are in place. On the other hand, it is currently possible in the U.S. marketplace to purchase milk machines that dispense pasteurized milk or milk powder products in sugar-laden chocolate and strawberry flavors.¹⁷

VENDING MACHINES IN THE UK

Farmers in the UK and Ireland have had better luck importing raw milk vending machines, and the major vending machine producers have made rapid inroads there. Starting in 2011, officials have allowed farmers to use raw milk machines on the farm.¹⁴ In all, almost one hundred and fifty farms are selling raw milk in the UK and Ireland.¹⁸



Fen Farm Dairy raw milk vending machine in the UK

The placement of a vending machine at a local Selfridges store (part of a department store chain) has been more controversial, because the UK's Food Standards Agency (FSA) views it as technically breaking a law that bans the sale of raw milk from mainstream retail outlets in England, Scotland and Wales. Selfridges

personnel say that their local government gave permission for the machine to be operational on the premises. Selfridges stopped selling the milk, but the FSA persisted and is prosecuting Selfridges as well as Steve Hook, the farmer from Longley's Farm in East Sussex who was in charge of filling the machine.^{19,20}

Jonny Crickmore of Fen Farm Dairy in Suffolk has been farming for over eighty years. Jonny was the first farmer in the UK to install a farm-based raw milk vending machine in 2011. He and his brother George milk three hundred French Montbéliarde cows, run a beef herd and make raw cheese, butter and cream. His “Baron Bigod” is Britain's only raw brie and is described as “creamy, smooth and nutty.” Jonny's neighbor, Julie Cheyney at White Wood Dairy, uses his milk to make her celebrated St. Jude cheese.^{21,22} Jonny likes the fact that he, rather than a processor or supermarket, is in control of the milk. He uses the DF Italia machines and sells them to other farmers.¹⁴ On Saturdays he sells about one hundred and ten liters of raw milk and is confident that he will sell up to two hundred liters eventually because people are just learning about the vending machines. He

says that the machine improved his cash flow “instantly.”^{7,14,21,22}

Jeremy Holmes is another dairy farmer who owns a machine from DF Italia. The machine cost him nine thousand pounds (\$11,400). He milks a mix of Holstein-Friesians crossed with Brown Swiss. He thinks the vending machine is “absolutely brilliant” and has probably saved his business. He notes that he pays the utmost attention to hygiene to ensure that the lab test results are “easily met.”^{7,14}

Elwick dairy farmer Andrew Sturrock, a third-generation farmer of Home Farm, has launched a new vending machine that allows villagers to serve themselves with a “pinta” or two of the white stuff that has been freshly milked that day. It is the first of its kind in the North East. Sturrock bought the machine after seeing an item about it on the BBC Countryfile television program. Sturrock said that he “installed the vending machine as a way of adding value to our products,” noting that “people love the taste and keep coming back.” Every morning, Sturrock pours one hundred and twenty liters of raw milk from his one-hundred-and-eighty-head herd into the machine after it has been filtered and chilled. The Home Farm website shows a video of seven-year-old Louis Richmond purchasing milk from the machine on his tippy toes and, after the bottle is filled, taking a long slug and then giving the camera a million-dollar smile.²³

In the UK, raw milk is not only the choice of smiling seven-year-olds and many Britons but also of the royal family. A recent report states: “Queen Elizabeth drinks her milk raw. She reportedly thinks so highly of unpasteurized milk that when her grandsons Princes William and Harry were students at Eton, she instructed herdsman Adrian Tomlinson to bottle up raw milk from her Windsor herd and deliver it to them at school.”²⁴ Prince Philip also supports the consumption of raw milk.

RAW MILK SAFETY

What is the safety record for raw milk vending machines that have now dispensed thousands of liters of milk? In Slovenia, health officials confirm that there have been no outbreaks of illness.⁹ In fact use of the milk machines may

limit the potential for introduction of pathogenic bacteria because the milk goes straight from the cow to the dispenser without undergoing any intermediate processing,²⁵ and the milk is kept at a constant temperature.⁸


With its large network of vending machines, there have been no reports of illness in Italy. Nonetheless researchers in northern Italy decided to examine milk samples from sixty machines on thirty-three farms that sell about three thousand five hundred liters of raw milk daily.²⁶ When they used the method of testing (called an ISO test) that the region’s regulators rely on to check milk safety, the researchers found no pathogens. When they decided to use two additional testing methods—polymerase chain reaction (PCR) and modified bacteriological analytical manual (mBAM)—they detected the presence, in extremely small numbers, of *Salmonella*, *Campylobacter jejuni*, *E. coli* O:157 and *Mycobacterium avium* subsp. *paratuberculosis* (Map), leading the researchers to conclude that the standard ISO test is “not sensitive enough.” The researchers also found that “in comparison with milk samples collected from bulk tanks, the milk samples collected from vending machines showed a significant increase of total bacterial count ‘meaning that raw milk was mishandled during distribution and sale,’ perhaps due to lack of consistent temperature control.”²⁶ However, they failed to disclose their methods for protecting the milk from contamination during collection of the samples.

Another Italian study conducted from 2009-2011 assessed six hundred and eighteen milk samples from one hundred and thirty-one vending machines for the presence of pathogens.²⁷ They found that 0.3 percent of the samples were positive for *Salmonella* spp., 0.2 percent for *E. coli* O:157, 1.5 percent for *Campylobacter* spp. and 1.6 percent for *Listeria monocytogenes*. The researchers did not compare pathogen levels in raw versus pasteurized milk samples, nor did they consider the possibility that they themselves may have mishandled the milk. A study comparing the detection rates for these bacteria in similar samples of pasteurized milk or raw milk intended for pasteurization might furnish more credible information for risk assessment.

In early 2017, reports emerged of a *Campylobacter* outbreak in the UK’s South Lakeland District, sickening fifty-six people. Authorities associated the outbreak with milk from a raw milk vending machine, shutting it down pending further testing and investigation. No reports have been forthcoming to identify or confirm the source of the bacteria.²⁸

The European Union watchdog for food safety—the European Food Safety Authority’s Panel on Biological Hazards—has its eye on raw milk. Clearly this is because of the growing consumer interest in the health benefits of raw milk consumption. The panel has been unable to quantify accurately the public health risks associated with drinking raw milk due to gaps in data (or shoddy records?). However, member state data on food-borne disease outbreaks point to twenty-seven outbreaks between 2007 and 2013 due to consumption of raw cow’s or goat’s milk. Most (78 percent) were caused by *Campylobacter*; others were caused by *Salmonella*, Shiga-toxin producing *E. coli* (STEC) and tick-borne encephalitis virus (TBEV). No further information is available regarding the outbreaks or their relationship to raw milk vending machines.⁹

THE BIGGER PICTURE

According to raw milk expert Dr. Ted Beals, consumers are about thirty-five thousand times more likely to get sick from other foods than they are from raw milk.²⁹ Informed consumers are aware of the true risk-benefit ratio of consuming raw milk from farms employing diligent practices. Despite government attempts to intimidate farmers and consumers through police and regulatory actions, authorities in the U.S. and elsewhere have not been able to stem the tide of the raw milk movement, which continues to spread. The rising popularity of raw milk vending machines and direct farm-to-consumer sales reflects a strategic business model that is helping many dairy farmers not only stay in business but make a reasonable living.³⁰ 

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Healthy Baby Gallery



Sibling Taliesin Moon holds baby Elwyn Oak just hours after Elwyn's birth. Elwyn Oak was born at home after a short enjoyable labor at East Wind Community. Elwyn Oak loves his rich breast milk and shows his appreciation by sleeping for long stretches and blessing us with beautiful smiles. Taliesin loves a variety of foods and especially enjoys homemade kimchi, bone broth and even his cod liver oil. The whole family enjoys the raw grass-fed dairy near our community farm, and many fresh vegetables and meats grown and processed right at East Wind. We are all grateful to a nourishing diet for our good health. Thanks, WAPF!



Healthy, happy and beautiful Landon Spencer was born on March 2, 2016, weighing close to nine pounds to proud parents Alissa and Eric and proud grandmother Catherine. Landon is blessed to have two older siblings. Twins Benjamin and Isabel were born in December 2010, and weighed in at seven pounds each. The entire family eats a WAPF diet of raw milk, fermented cod liver oil, butter, grass-fed meats and bone broths.



Natasha (pictured at six months) was born to parents who ate a Weston A. Price diet for years prior to her conception, including fermented foods, cod liver oil, raw milk and lots of oysters and shellfish. At twelve months, she is an extremely happy baby and everyone comments on how much she smiles. She has nonstop energy and loves people, playing and eating. She is still breastfeeding, which her mom hopes to continue for many more months even though mom works full-time. Natasha's favorite foods are pastured egg yolks, sweet potatoes (fermented or with butter), raw milk kefir, wild-caught salmon, pastured meats, bone marrow custard, cod liver oil and organic veggies with lots of raw butter. Thank you, WAPF, for all the important knowledge you share!



Veronica Rose is the youngest child of Cincinnati chapter leader Ellie Sodergren. After celebrating one decade of WAPF membership, Ellie is delighted to see that Veronica shows all the characteristics of a well-nourished child. During her complication-free pregnancy, Ellie enjoyed homemade raw-liver "prenatal" vitamins, loads of raw

egg yolks, butter, raw milk products and cod liver oil. After a celebratory home birth, Veronica has grown and developed in beautiful proportion. Now two years old, Veronica enjoys the full spectrum of her family's homemade, farm-fresh, nutrient-dense foods, right along with mom's breast milk. Veronica's name means "true image," and this true image of a healthy child gets endless comments on her delightful curiosity, bright eyes and stunning intelligence.

Please send your healthy baby photos and text to journal@westonaprice.org.

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WAPF AT TAKE BACK YOUR HEALTH CONFERENCE IN LOS ANGELES

Hosting the WAPF booth at the Take Back Your Health Conference in April 2017. From left to right: Joy de los Santos (Pasadena chapter leader), Mona Lenihan-Costanzo (Laguna Niguel chapter leader) and Aaron Zober (Los Angeles chapter).

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WAPF AT AUTISM ONE CONFERENCE IN COLORADO SPRINGS

Megan and Andrew are happy because they eat butter!
 They share their love of butter at the WAPF table at the
 May 2017 AutismOne Conference in Colorado Springs.

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WAPF AT HEALTH AND WELLNESS FAIR

WAPF table at the Health and Wellness Ministry at the Community Outreach Health and Back2School Fair sponsored by Temple of Prayer Family Worship Cathedral UCOGIC in Fairburn, Georgia, where the senior pastor is Aaron B. Lackey, Sr.

Pictured left to right, Carles Kirby, Jacqueline Sumner, Marion Tate, Shelia T. Campbell, DNP,RN,NEA-BC, Camielle Tate, RN,BSN and Carmen L. Reddick, CHC,BA, TOP Health and Wellness director and Weston A. Price Foundation South Metro Atlanta, Georgia, chapter leader.



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Sally Oh and Courtney Byron, co-chapter leaders in eastern Kentucky, at the Organic Association of Kentucky conference, attended by many WAPF members. (That's a bottle of beet kvass on the table.)



Jennifer Grafiada, chapter leader for Douglas County, Oregon, exhibits at a high school health fair, displaying Dr. Price's findings about fat-soluble vitamins. Students observed the difference in color and quality between free-range and corner store eggs, compared conventional and grass-fed butter and sampled grass-fed butter on traditionally prepared rye bread from a local bakery.

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The Weston A. Price Foundation currently has 460 local chapters:
 364 serve every state in the U.S. plus the District of Columbia and 96 serve 28 other countries.
 Welcome new chapter leaders from Slovakia and Tasmania, Australia!

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 O'Neill Area: David & Barbara Wetzel (402) 858-4825, gppoffice@flco.biz
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FARM VISIT

The Westford, Massachusetts, chapter of WAPF, led by Kathy Lynch and Linda Cox, held a spring farm tour of Clark Farm. Farmer Andrew Rogers showed the group his greenhouse starts, the fields with vegetables and fruits sprouting, and free-range animals enjoying the day. Farmer Andrew's hard work is evident in his quality, organically-grown produce.

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LOCAL CHAPTER BASIC REQUIREMENTS

1. Create a food resource list of organic or biodynamic produce, milk products from pasture-fed livestock (preferably raw), pasture-fed eggs and livestock and properly produced whole foods in your area.
2. Provide a contact phone number to be listed on the website and in our quarterly magazine.
3. Provide Weston A. Price Foundation materials to inquirers, and make available as appropriate in local health food stores, libraries and service organizations and to health care practitioners.
4. Provide a yearly report of your local chapter activities.
5. Be a member in good standing of the Weston A. Price Foundation.
6. Sign a contract on the use of the Weston A. Price Foundation name and trademark.

OPTIONAL ACTIVITIES

1. Maintain a list of local health care practitioners who support the Foundation's teachings regarding diet and health.
2. Represent the Foundation at local conferences and fairs.
3. Organize social gatherings, such as support groups and pot luck dinners, to present the Weston A. Price Foundation philosophy and materials.
4. Present seminars, workshops and/or cooking classes featuring speakers from the Weston A. Price Foundation, or local speakers who support the Foundation's goals and philosophy.
5. Represent the Weston A. Price Foundation philosophy and goals to local media, governments and lawmakers.
6. Lobby for the elimination of laws that restrict access to locally produced and processed food (such as pasteurization laws) or that limit health freedoms in any way.
7. Publish a simple newsletter containing information and announcements for local chapter members.
8. Work with schools to provide curriculum materials and training for classes in physical education, human development and home economics.
9. Help the Foundation find outlets for the sale of its quarterly magazine.

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CHAPTER RESOURCES

Resources for chapter leaders can be accessed at westonaprice.org/local-chapters/chapter-resources, including our trifold brochures in Word format, chapter handbook and PowerPoint presentations.

LOCAL CHAPTER LIST SERVE

Thank you to Maureen Diaz a chapter leader in Pennsylvania, for administering the local chapter chat group. New chapter leaders can sign up at <http://groups.yahoo.com/group/wapfchapterleaders/>.

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Janice Curtin, Chapter Leader in Alexandria, VA, attended the fabulous Revolution for Truth rally on vaccine safety in Washington, DC, in March 2017, organized by the Vaccine Injury Awareness League. Speakers included Robert F. Kennedy, Jr., Del Bigtree (producer of *Vaxxed*) and Brian Hooker. Janice is pictured with representatives for *Vaxxed* and Revolution for Truth.



Judy Carol, Michael George, Maureen Diaz
and Karen Gay at the Nonprofit Expo in
Richmond, Virginia.

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NEW ZEALAND WEDDING OF CHAPTER LEADER CAROLINE MARSHALL AND BARRY HOBMAN



Fifty-one guests celebrated the garden wedding of WAPF Auckland South and East chapter leader Caroline Marshall and Barry Hobman on Saturday, January 14th, Barry's seventy-seventh birthday. The wedding was very relaxed with a "retro chic hippy theme" and local, organic WAPF-oriented foods catered by Mercury Orchard: spray-free red flesh plums and orange segments as people arrived, authentic French charcuterie, free-range chicken liver and duck fat "parfait," French bakery sourdough breads, New Zealand Lewis Road Creamery cultured butter, organic juicy lamb chops from Hawke's Bay, homemade beef moussaka, local raw Pacific oysters, local garden greens, Greek salad, finely grated organic raw beetroot salad with chopped organic carrots with olive oil and balsamic vinegar and tiramisu. The grand finale (pictured here) was the wedding cake, a four-tiered cheese "cake"!

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WISE TRADITIONS IRELAND 3

Regular attendees and new faces, including chapter leaders from Spain and Portugal, attended the third WAPF conference in Ireland held at Thomond Park in Limerick.

This year's speakers covered a wide array of topics under the umbrella of "Changing Our Minds." Speakers included Elisabeth Ryan who spearheaded the campaign to ensure raw milk was legalized in Ireland; Brendan O'Brien (arguably the first WAPF member in Ireland!) on Weston Price and his work; Ivor Cummins (aka The Fat Emperor) who challenged listeners to look at the role of insulin as a health marker; Philip Weeks on detoxification; Jim Cronin on organic farming and healthy soil; Dr. Natasha Campbell-McBride on the GAPS diet and her new book on the dangers of vegetarianism; Dearbhla Reynolds, Val O'Connor and April Danann on lacto-fermentation; Maya Flynn on good mood food; Sam Felthams on the development of the Public Health Collaboration in the UK; Dr. Zoë Harcombe on nutritional myths; Dr. Neville Wilson on methylation; and Barbara Barraton on meditation.

Masterchef Catering served two wonderful lunches that included homemade broths, fermented foods and sourdough bread.

The highlight was a local newspaper article complaining that the conference featured anti-vaccination speakers who used "offensive language about autism and say people with autism can be 'cured'. . . Vulnerable parents will be listening to this."



Peter and Natasha Campbell-McBride with conference organizers Deirdre MacMahon and Brendan O'Brien.

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IN

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Hopeful Farms raises 100% grass-fed beef, pastured chicken and turkey, and pastured pork. Our animals are not fed hormones, antibiotics, GMOs or soy. Shipping and farm pickup are available. Visit our website: fryfarmscoop.com or contact us at fryfarm-scoop@gmail.com.

MA

Many Hands Organic Farm in Barre, MA. All products certified organic and free range. Lard, pork, chicken and beef stocks, pork, chicken, turkey and 26 weeks of CSA. No till, nutrient dense. www.mhof.net; (978) 355-2853; farm@mhof.net.

MD

100% soy-free chicken, eggs, pork and beef. Chicken livers, chicken feet and heads. Bacon and sausage. Raw pet milk. Raw milk blue and cheddar cheese by cheesemaker Sally Fallon Morell. **Will ship** whole cheese wheels. Southern Maryland, within 1 hour of downtown Annapolis and Washington, DC. Saturday farm tours. Store open Thursday to Saturday 10-6 or by appointment. P. A. Bowen Farmstead, 15701 Doctor Bowen Road, Brandywine, MD. (301) 579-2727, pabowenfarmstead.com.

Nick's Organic Farm. Grass-fed beef (no grain ever), free range eggs, pastured chicken and turkey. Liver, organ meats, and bones. Organic poultry feed. Pick up in Potomac or Buckeystown. Our livestock are rotated to fresh pastures on our fertile organic soils and receive organic feed, no hormones, antibiotics, or animal parts. We raise our cows 100%

grass-fed. We raise our hay, raise and grind our own grain into poultry feed and process our poultry. Quality organic products since 1979. (301) 983-2167, nicksorganicfarm@comcast.net, nicksorganicfarm.com.

MI

Creswick Farms. Dedicated to raising healthy, happy animals—lovingly cared for just as Mother Nature intended—which provide high-energy, nutritious and delicious food sources for health-conscious individuals. No antibiotics, steroids or GMOs ever fed to our animals! (616) 837-9226, CreswickFarms.com.

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MN

Farm On Wheels offers animals raised green grass-fed & certified organic. Nutrient-dense beef, lamb, chicken, eggs, turkey, goose, duck, and pork, No corn or soy. Farmers Market year around in St. Paul, Prior Lake, Northfield. Linda (507) 789-6679, farmonwheels.net, farm_on_wheels@live.com.

MS

Nature's Gourmet Farm raises nutrient dense grass-fed beef, pastured pork, and pastured broilers. Animals are hormone, antibiotic, and GMO free! We service south Mississippi, Alabama and Louisiana. For details and order information visit our website at www.naturesgourmetfarm.com.

NY

MYS-permitted raw milk on Long Island, from grass-fed pastured Jersey cows. Visitors welcome. 5793 Sound Ave, Riverhead, NY 11901. (631) 722-4241.

Raw milk, cheese, butter, etc. from 100% grass-fed Jersey cows. 100% grass-fed beef and lamb. Pastured pork, chicken and turkey (soy-free options available). Fermented veggies and more! Have dropships in select areas or **can ship.** Call for details. Pleasant Pastures (717) 768-3437.

OH

Non-GMO pastured pork & chicken, eggs and grass-fed beef. Also 100% A-2, A-2 Guernsey milk, cream and cheese. Will ship Guernsey Cheddar plus Goat Gouda and Cheddar. For more details call

(330) 359-2129 or email thefoodbarn.veg-gies@gmail.com. Wholesome Valley Farm, Wilmot, OH

Sugartree Ridge Grassfed. Openings in 100% grassfed herdshare with nine delivery sites in the Cincinnati area. No grain, no silage. Sixteen cows (cross between Jerseys, Guernseys, Brown Swiss and British White) grazed year-round on sixty acres rotating through thirty paddocks (which are allowed to grow for sixty days between grazings and are spread with organic, Albrecht-based mineral supplements). Nutrient-dense milk, family-friendly farming and holistic stewardship. 6851 Fair Ridge Road, Hillsboro, OH 45133.

OR

Grass-based biodynamic raw milk dairy offering Jersey Hi-creamline milk, cream, golden butter, cottage cheese and aged cheeses. Soy-free veal and pork seasonally. On farm sales and membership club. **Can ship.** Sherry and Walt (541) 267-0699.

PA

Grass-fed lamb, pastured Tamworth pork & piglets, pastured chicken, honey, Sheep Camp, farm tours, Adopt-A-Sheep & more. Visit Owens Farm Sunbury, PA, owensfarm.com (570) 286-5309, info@owensfarm.com.

Rambling River Pastured Farm - Pastured pork, chicken, duck, turkey. Non-GMO feed. 100% Grass-fed lamb. CSA shares or on-farm sales. **Shipping and delivery available.** Special pricing on surplus frozen chicken from 2015. Located near Gettysburg. Contact Meredith at (717) 624-2141.

Raw milk cheese from our grass-fed Jerseys, made on our family farm with Celtic sea salt. No grain feed. Also grass-fed beef and pastured chickens, turkeys and eggs. All soy-free, no hormones or synthetics. On-farm sales, **will ship cheese.** Wil-Ar Farm, Newville, PA (717) 776-6552.

Wentworth Dairy. Grass-fed raw milk, raw milk cheese, free-range eggs, pastured pork, grass-fed beef. We are located 8 miles from MD state line. Family farm, all natural grass-based, Ayrshire and Jersey cows. Rob & Bonnie Wentworth, 1026 River Road, Quarryville, PA 17566, (717) 548-3896.

VA

Salatin family's Polyface Farm has salad bar beef, pigaerator pork, pastured chickens, turkeys and eggs, and forage-based rabbits. Near Staunton. Some delivery available. Call (540) 885-3590 or (540) 887-8194.

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WY

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Zippi; handmade quilts. Exclusive source of Nourishing Traditions posters. Saturday farm tours. Store open Thurs-Sat 10-6 or by appointment. P.A. Bowen Farmstead, 15701 Doctor Bowen Road, Brandywine, MD. (301) 579-2727, pabowenfarmstead.com.

Natural insect control. Bat House kits. Easy assembly. \$30.00. 2, or more, \$25.00 each. Also beautiful, handcrafted, heirloom toys. Train made with 4 different hardwoods. \$40.00. Cherry pull duck or rabbit. \$28.00. All post paid. Many others. Wholesale to gift shops. Keim's Wood Handcrafts, 455 Argersinger Rd Fultonville, NY 12072.

DVDS

DVD "Nourishing Our Children" recently launched a DVD that may be used for one's self-education or to present to an audience. You will learn how to nourish rather than merely feed your family. nourishingourchildren.org/DVD-Wise.html Free shipping!

SHARE YOUR PASSION for food with friends and family! The Diet for Human Beings affirms our human requirement for fats, with less emphasis on starchy carbs. "An Hour To Watch - 30 Days To Try - Your Life Will Never Be The Same" on dietandhealth.com.

EMPLOYMENT OPPORTUNITIES

A lovely, well appointed cottage, gardens, pool, labyrinth and more awaits a motivated couple interested in sustainable healthy living and exploring New Zealand. See woof website for how this works. For more information, email Lyn at 1gardenstone1@gmail.com.

FARM FAMILY OR INDIVIDUAL needed to help set up and live on pristine 164 acre former raw dairy farm and cheese making facility in SW Washington state. If interested, please send email to Lawren@wellaroo.com with subject line: "dairy farm".

HIRE STOOL DONOR Child with autoimmune disease needs fecal transplants. Donor WAP-type diet. Adult or child over 1 year. FTP used successfully for son. (325) 261-8870, cececebrown@gmail.com. Per GI-doctor, son needs to continue FTP for limited course. Prior donor moved overseas.

Successful retiring farmer seeking paid apprenticeship. Rural S. Oregon Cascades 100-ac. forested/9-ac. pastured organic beef main operation. Very established customer base.

Seek mature, responsible, teachable person with desire/willingness to learn. Basic Ag/Husbandry is necessary but the willingness to learn is most important. Ongoing projects in construction, soil/pasture management, agronomy, large composting, husbandry, agriculture, irrigation, gardening, forest management, heavy equipment, mechanics, welding, etc. We try to do it all here. Looking for long-term potential partnership. Opportunity of a lifetime. inforoc@wildblue.net.

We are seeking a middle aged couple to move into our log home and care for our small herd of dairy cattle. Knowledge of organic farming, animals and cheese making helpful. Does this look like something you could enjoy? Come give it a try! - Commit to 6 months or longer if both couples find a good fit. Couple mid 60's due to health reasons need a sabbatical from our new and fast growing A2 raw milk micro-dairy in Wyoming. For more information send email w/ resume diamondsretreat@gmail.com; diamondsretreat.com

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VIROQUA NUTRITION COUNSELING is a traditional foods-based practice in Southwest Wisconsin. Laura Poe, RD is a holistic dietitian, culinary instructor and WAPF member. In-person or distance consultations available. Email Laura at viroquanutritioncounseling@gmail.com for more information or to schedule an appointment. Initial consults are \$100, \$75 for follow-ups.

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CANADIAN FARM FOR SALE: barn is new construction, state-of-the-art passive solar on south-facing slope in temperate zone. 59 acres with new wall & drive just 5 kilometers from year-round farmer's market. Canada expedites work permits for farmers (got mine in 2 months) and good stewardship grants from province available to U.S. citizens. Email: rose@masoncreekfarm.com listing: <https://www.tradewindsrealty.com/listing.pnp?id=9997>

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ROOM(S) RENTAL/HOUSE SHARE. Google: Edgewater Farm & B&B, Phippsburg, Maine 04562. Many beaches (Popham), woodland walks. Indoor Pool. Organic veggies, fruit, herbs, flowers: Learn/share gardening & cooking. Starts: Oct '17 on ...W: ewfbb.com E: ewfbb@comcast.net Bill & Carol Emerson (877) 389-1322.

Retired professional woman (age 77) living in Reston, VA plans to relocate to the Phoenix area this year. I hope to find one or more individuals interested in shared housing. Use mobility scooter and rollator (sitting down), currently live alone, have weekly help, order everything online—buy from Miller's Organic Farm. Please email me at Sgboots232@gmail.com.

SEEKING SAFE SANCTUARY Longtime WAPF supporter and pioneer in the ancestral foods marketplace seeks housing in low-EMF environment, no mold. Separate or shared housing, long-term housesitting/caretaker position, or other alternatives, including land for constructing natural dwelling. Northern California preferred. Please contact: mariebishop@outlook.com or (415) 868-9622

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Farm stay/vacation rental in beautiful Three Rivers, California — just outside Sequoia National Park, 3-4 hours from greater LA/SF Bay area. WAPF members for ten years. We raise chickens, sheep, cows and pigs. Grass fed meat/eggs available. hornmountainranch.com

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WAPF RESEARCH

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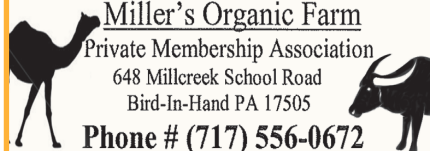
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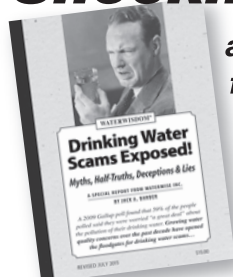


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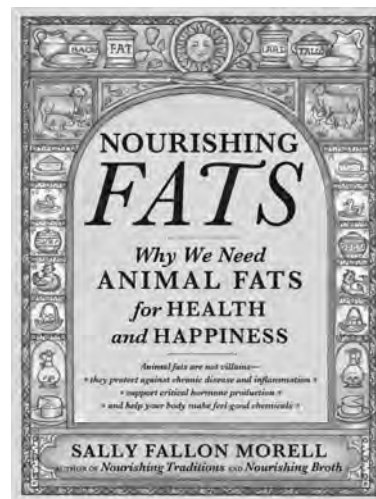


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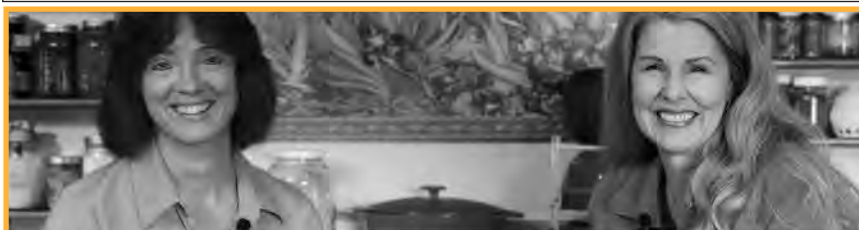
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