THE Original Internist

C • O • N • T • E • N • T • S

CLINT PUBLICATIONS

VOL. 27, NO. 2 · ISSN 1529-4722 · JUNE 2020

NuMedica

THE ORIGINAL INTERNIST

Clint Publications

720 Oak Knoll
Rolla, MO 65401
Telephone: (573) 341-8448
Fax: (573) 341-8494
E-mail: virginia@drkessinger.com
www.clintpublications.com

The Original Internist is published quarterly. Publication months are March, June, September and December, barring any unusual or unforeseen circumstances.

News items and/or letters pertaining to natural health care are welcome. The editorial staff reserves the right to edit and/or reject all material received. Letters to the editor may be condensed in order to fit the allotted space. An address and telephone number where the author may be reached during normal business hours should also be included for verification purposes. Deadline for article submission is the 5th of the month preceding publication.

SUBSCRIPTION & ADDRESS CHANGES
A subscription to The Original Internist is $50. A free one-year subscription will be given to anyone who submits a case study or scientific article which is accepted for publication. (This does not include letters to the editor.)

Please notify Clint Publications if you change your address or office name, or we cannot be responsible for proper delivery of your journal.

ADVERTISING
Advertising deadline is the 5th of the month preceding publication. For advertising rates or information, contact Clint Publications.

Pinc new ad

From the Editor's Desk

by: Virginia Kessinger

The world has certainly changed since the last issue of The Original Internist.

Half the country is staying home, while another large group are wearing masks and staying their distance from others. Another faction refuses to give in to the idea that we need a pause in normal activities. For the sake of containing a virus we know little about.

On a personal note..... I have a granddaughter who was diagnosed with acute leukemia during this chaos. She has been alone in a KC hospital for two months without a hug from any family member! How is that okay??

Our posture in our clinic has actually not changed much at all. We always washed our hands constantly and wiped all surfaces with disinfectants many times during the day. I am sure that has been the procedures followed in most health care facilities, before we were faced with a pandemic issue.

I am happy to report that most of our patients felt secure when visiting our clinic during the Corona-19 episode. Some were surprised to see we did not close our doors, while others fully expected no less. Why would we not be available to help those in need of healthcare services?

We have notoriously taught our patients that their best defense from disease is always a good offense of good health practices. Good food, great exercise and good hygiene are among necessary steps to insure optimal health. Dr. Jack Kessinger used to say, "you cannot supplement yourself out of poor health." It takes a bit of effort on the patient's part to stay disease-free. Just taking vitamins, minerals, or even drugs, will not make you disease-free. You also need healthy habits.

Our body is made to stay upright and it takes a long time of bad habits to develop a disease. A person does not go from totally healthy one day and have a disease the next.

This is the importance of holistic-thinking physicians. They are looking for "warning signs" in patients they have the privilege to see *who just don't feel well*. These functional thinking type of doctors are searching for system breakdowns, less than perfect blood values and physical signs of patients leaning toward disease.

When you look at typical medical doctor thinking, their approach is much different than functional medicine doctors. The MD typically looks at blood values and sees nothing alarming.....if the values are not out of clinical range. They tend to sit on their hands until the blood work is advanced enough for them to name a disease. That is when they are confident to prescribe a drug to fit their diagnosis.

This "wait and see" approach has never seemed rational to me. The biggest contradiction I understand with this concept is looking at clinical ranges in lab values. I remember years ago that the labs came up with their *clinical values* by taking 100% of those being tested, take off the top 20% and the bottom 20%, and call everything in between normal. Over the years, as Americans have become sicker and sicker, the clinical values have changed to only 5% on each end of the values. If you really think about it, this says that 90% of sick people are considered normal?? The other problem I see with these calculations is..... all blood testing is performed on patients who are ill to start with.

Sometimes I think I do too much thinking .
Just saying!

Editors note:

I love new challenges so here goes my next project! A professional friend of mine recently made a great recommendation that intrigued me! He suggested that we honor Dr. Jack Kessinger's legacy with a yearly award:

DR. JACK KESSINGER ANNUAL AWARD FOR ACHIEVEMENT IN MEDICAL RESEARCH

I have the groundwork done on this and can announce that the Recognition Award will be chosen by our Editorial Board. The honor will be given for the most outstanding article published in The Original Internist journal during the current year. The winner will be awarded a plaque.

The first annual recognition will be awarded in 2021. All authors of any published article during 2020 will be eligible for the award. The winner will be announced in the March 2021 issue of The Original Internist.

◆

Christopher Murray, DC, DABCI

DOT *ONLINE* MEDICAL EXAMINER

Qualify on Your Own Timeline

National University of Health Sciences

in cooperation with ProHealth Seminars

For more information
NUHS Postgraduate
630.889.6621

To view the course please go to:
https://nuhs.wcea.education/searchOnlineTraining#/training/194954

Quotes from a few of our attendees:

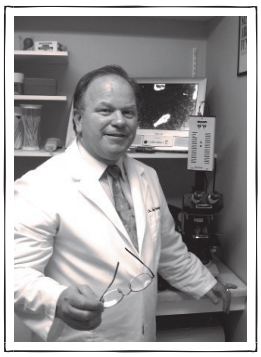
"The materials were complete and very educational. Dr. Chris was very thorough in his coverage of the material." L. Lawson

"This class will definitely make me a better doctor even if I never do a single DOT exam." C. Janushchka

" Dr. Murray is easy to understand, knows his stuff, and easy to talk to. I thought the course was great!" S. Black

" His knowledge of the subject matter, his organization and delivery was outstanding. When you pay, you'd like to get what you paid for. I definitely did. I got it!" R. Shepherd

The Legacy Continues



by: A. Jay Kessinger IV, DC, ND, DABCI , DACBN

The novel Coronavirus Pandemic 2020; what a unique way to find out that all the 2020 day planners we received for Christmas last year would seem for naught. Even though everything has changed, there is nothing new under the sun. Humanity has faced regional and global pandemics before, and the solution has always been increased sanitation, followed by enhanced natural immunity.

COVID-19 came on us as a thief in the night, totally unexpected by the masses. This blind side occurrence happened due to allowing the media to not be held to a higher standard in reporting all the facts in a truthful manner, but only reporting and rehashing a single story with an opinionated slant leaving us oblivious. There are many conspiracy theories as to why this occurred at this specific time in history. Some may be true, yet the reality of the matter is probably not so much the physical infectious nature of this epidemic, but the psychological panic impact it's having within our national borders and upon our psyche.

Our physical being is not created to live forever, yet we are each created to live within our physical confines for the betterment of one another. Forced social distancing from our loved ones incarcerated in chronic care facilities is less than humane. If we are too afraid to interact with one another how can we grow together? How can we truly live?

The world of professional health care was rocked with the panic-driven politically-forced national focus on our impending doom from COVID-19. Hospitals became institutions of incarceration for only the most urgent of care. The empty beds were necessary to ensure hospital capacity for the anticipated influx of all the victims of this new and novel virus. Many *makeshift* hospitals were built by federal and private entities; i.e. FEMA, USNS Mercy, USNS Comfort, Good Samaritans, etc. All this preparation left our acute care facilities vulnerable to many layoffs, and significant financial down-turns. Now, the makeshift hospitals are being taken down and the Navy hospital ships have been sent away as the beds weren't necessary. Health facilities have begun the arduous process of opening back up and seeing patients with non-emergency and elective medical services. Maybe someday soon the hospitals and nursing homes can again become user-friendly by allowing visitors.

As a chiropractic internist, I see *the sky is the limit for natural health care providers*. The public is becoming more and more savvy to the necessity of laboratory tests to provide evidence of their bodies' ability to handle the stress around them. The best defense against any pathogen is a strong offense. As the Indonesian reindeer (javan-rusa) scarred from a gash of a deadly bite from a komodo dragon was able to survive, we too can survive the COVID-19 epidemic of 2020 given healthy dietary and exercise habits with ample nutritional supplementation.

Stress is important to build strength, but constant stress with no light at the end of the tunnel steals our sense of well-being. The COVID-blamed panic has overwhelmed us through constant media attention and additional urban regulations. More important than any antibody or antigen test for the coronavirus, is a modified CMP, CBC with differential, and vitamin D laboratory tests. These basic blood tests are the foundation for measuring immune and metabolic readiness and response. The ability to physically gain strength is paramount to the achievement of optimal health. Henceforth, the achievement of optimal health is paramount on a biomechanically healthy spine.

I foresee this too will be a historical blurb noted, with humanity in her efforts to coexist peacefully and safely amongst the world's unknown. COVID-19 Pandemic of 2020 has caused great panic and, in my opinion, much undo hardship from alienation of loved ones, many in their desperate time of need for companionship of said family. Again, as with all other pandemics humanity has historically endured. The solution for this one will be two-fold: increased sanitation and enhanced immunity. As with any other pathogen, with this too we must coexist. We're going to have to learn to live with this bug as we have with every other one that has come before it. ◆

Alletess

SOUND OFF

by: J. Getoff, CCN, CTN, FAAIM

CHOLESTEROL, STATINS, MUSCLE ISSUES, MEMORY ISSUES, AND TREATMENT OPTIONS

The huge complex cholesterol "issue" has been written about by numerous extremely knowledgeable experts including Duane Graveline, MD, Uffe Ravnskov, MD, PhD, Sherry Rogers, MD, and Russell L. Smith, PhD to name just a few.

What I will do is write about what I do in my own clinical practice regarding "high" cholesterol issues in order to help patients who come to me having already been damaged by their cholesterol lowering medications and scared by their physicians who incorrectly believe that their numbers are too high.

I would like to make it clear that I am NOT a physician, as physicians are taught extremely little about nutrition, detoxification, or methods for supporting the complex healing abilities of the human body. Rather, they are taught what drugs could be used in order to force the body back into the parameters which they have (often wrongly) been taught are it's proper "reference range" parameters. Please see my own credentials at the end of this article.

There are some important things which the reader must understand and although they are well known and accepted by many medical and nutritional expert clinicians and research scientists, they are not known, accepted or understood by mainstream medicine, the media, and therefore the public.

The first is that we are still unable to test for numerous imbalances in the body and so a huge number of patients go to a large number of physicians, and after extensive testing, are told that nothing can be found that is "wrong" or "out of range". Their next most often referral is to a psychiatrist, since, of course, if everything tested appears to be in the normal range, then the individual is not actually ill and it must all "be in their in head or their mind". This is rarely the case and there are many imbalances which need to be addressed, numerous deficiencies which need to be rectified and even more drug and chemical toxicities which need to be slowly reduced or reversed.

The second is that we know that the reference ranges for laboratory tests are not in any way examples of good health, but rather of normalcy. In other words these are the ranges that you would expect to see in the normal average population if someone has not yet become ill enough to have a diagnosed medical condition.

Since it is "normal" for a person to die of some form of heart disease, cancer, complications of diabetes, etc., rather than from old age, I for one have no intention of trying to always keep myself or my patients in every one of the "normal" ranges. Healthy would be far preferable to normal if I have a choice.

Yet another set of tools for the open minded health professional, are those lab tests that are still not being taught in medical school. These tests, which are widely used by some of the best physicians, locate nutritional deficiencies that can cause numerous problems. Some tests also look for food and chemical intolerances which can also cause many undesirable effects if not identified and corrected.

Some of the best tests are referred to as functional tests. These, such as methyl malonic acid and neutrophilic hypersegmentation index, show us if the body is receiving an adequate amount of a nutrient to do its job correctly rather than simply how much of the nutrient is in the blood. The two mentioned above are to test for adequacy of cellular B12 and Folate.

With all of the above facts in mind, let's take a relatively different look at both cholesterol and the problems caused by artificially lowering the cholesterol level with pharmaceutical interventions. If the reader is not already familiar with all of the actual facts regarding this essential substance, which we could not exist without, I highly recommend you read at least two of the books from the authors I mentioned at the start of this article, as I do not wish to re-invent the wheel. .

(Continued on next page)

Drs. Ravnskov and Graveline have already done an excellent job of covering this territory and Dr. Smith's older but still exceptional book is great if you can still locate an affordable copy. I also have many medical articles on cholesterol in that section of my own website.

A few things are certain, although not as well known as they should be. Cholesterol is essential, to the extent that without it we could not exist. This is equally true for both LDL and HDL and therefore to call the former "bad" is simply an incorrect use of the word. Many researchers (but few physicians) now accept that it is only oxidized or damaged LDL which causes problems and are bothered by how difficult it is to get the oxidized LDL test run by diagnostic laboratories, since very few offer this test and even fewer physicians know of its importance.

What happens if a fire (oxidation, inflammation, toxic overload) continues to progress no matter how hard the fire fighters work to put it out? They call in for reinforcements and more fire trucks with more fire fighters arrive. What does cholesterol do and how can it be compared to the firemen? Actually, they compare with one another very well. The body produces cholesterol for a number of reasons that we know about, plus most likely many more we have yet to discover. Cholesterol is produced to help repair damaged blood vessels often caused by insufficient anti-oxidant status such as inadequate vitamin E complex and vitamin C. If you do not already know this one, I highly recommend you read *Stop America's #1 Killer* by Thomas Levy, MD, JD.

Cholesterol is also produced so that the body will have adequate quantities to make all of our sex hormones. Cholesterol is produced as a protective substance against an increasing body burden of poisonous toxic substances which build up continually over time as we get older and are exposed daily to more and more environmental chemicals. Cholesterol is one of the dominant substances in a healthy brain, so I most certainly would not want to reduce it there. It also appears to be very protective of the myelin sheath of our nerves. Don't want a disease like multiple sclerosis?, better not take drugs to prevent your body from manufacturing the amount of cholesterol it senses that it requires as you get older. As an example, do we want set up road blocks in order to stop the additional fire fighters that had been called by walkie talkie as reinforcements, if the ones on the scene are no longer sufficient to do the job? I don't think so.

Tribal populations, who live far away from civilization and therefore have a far lower exposure to toxic chemicals and oxidatively damaging substances like chlorinated and fluoridated bathing and drinking water and inflammatory electric and wireless fields, have far lower normal cholesterol levels than we do in industrialized America. This lower level is all that their bodies require and so it is proper and healthy for them to have these lower levels, *but not for us*.

To be a bit less medical and a bit more common sense for just a minute, in clinical nutrition and naturopathy, I generally find that it is rarely ever in the best interest of my patients, to tell their body that it is stupid and should not be doing what it is doing. Rather, I need to investigate what might be causing lab test numbers to be outside of the (way too arbitrary) reference ranges that are printed on their reports.

So, this brings us to the "why's" of differing cholesterol numbers.

The following reasons are not in any particular order, since likely, their order of importance will vary from patient to patient (person to person).

1) As we age, out toxic load, often referred to as Body Burden continues to elevate. We are exposed to tens of thousands of new chemical compounds every year as industry never ceases to develop more cleansers, solvents, pesticides, herbicides, fungicides, polymers, and coatings, pharmaceuticals, etc. The body uses cholesterol and even HDL to help us deal with this onslaught and I would not want to reduce its ability to do so, any more than I would want to set up roadblocks in front of incoming firefighters.
2) The brain and the rest of our neurological system requires cholesterol to function properly. Want to get early dementia?, take a Statin drug. A few of the experts who have presented at the scientific medical conferences I attend have made the comment that we need a new condition, to be named "Statin Induced Dementia".

There is a great deal of well researched information on cholesterol which is withheld from the public and not taught to our physicians due to the power of the pharmaceutical conglomerate. We all lose and this is very sad. Educate yourself and pull yourself out of this vastly misled group,

◆

PHP

Doctors Supplement Store

Contemplating Use of Natural Dietary Supplements to Prevent/Treat Viral Infections:
Oil of Oregano and Monolaurin
A Timely Look At Covid-19

by: Harry G. Preuss, MD, MACN, CNS
Rich Scheckenbach
Cass Ingram, DO
Jeffrey M. Preuss, MD

Abstract
A decade and a half ago, one of the current authors (HGP) participated in writing a report eventually published in The Original Internist. Suffice it to say, much of that earlier material seems appropriate for what is happening now. The recent pandemic with COVID-19 has prompted a reworking of the original report with an important updating of material; largely because volatile aromatic oils and medium chain fatty acids derived from edible plants possess interesting antimicrobial properties – properties generally not recognized by the public or, for that matter, by the medical profession. The antimicrobial activity in oregano oil can be attributed in large part to its high content of phenolic constituents such as carvacrol and thymol. Lauric acid, found largely in coconut and palm kernel oil, can form monolaurin, a monoglyceride with high antimicrobial potential. Not too long ago we compared the antimicrobial efficacy of oregano oil and other essential oils as well as monolaurin *in vitro* by examining their effects on many different bacteria using a micro dilution method. Oregano oil, the most potent of the essential oils tested, and monolaurin both proved cidal in culture to a variety of harmful bacteria. *In vivo* experiments in mice show oregano oil and monolaurin, individually and combined, to be as effective as some antibiotics in combatting destructive staphylococcus organisms. Because of their major capability to destroy protective lipid envelopes around organisms, oregano oil and/or monolaurin could prove to be useful antimicrobial agents for prevention and therapy of a variety of dangerous infectious organisms – in the present case, viruses such as COVID-19. Of economic importance, prophylactic usage of these two generally regarded as safe (GRAS) supplements provides through their mechanisms of action toward infectious agents, particularly viruses, the potential to allow faster safe return of quarantined workers during pandemic periods.

Introduction
Nearly two decades ago, one of the current authors (HGP) participated in the writing of a report eventually published in The Original Internist.[1] Relevantly, much of that earlier material seems suitable to revisit based upon what is happening now. The recent pandemic with COVID-19 has prompted a reworking of the original report with an important updating of material; largely because volatile aromatic oils and medium chain fatty acids derived from edible plants possess interesting antimicrobial properties – properties generally not recognized by the public or, for that matter, by the medical profession.[1-3]

In the past, two remarkable agents were assessed, oil of oregano and monolaurin, based on their potential to prevent/treat a variety of harmful bacterial infections [1-3] -- especially those proven resistant to common available drugs.[4-17] Although the published work focused primarily on bacteria, some thought was given then concerning their abilities to be antiviral as well.[18-25] Important in the latter consideration is the major working mechanism generally proposed to be responsible for the beneficial effects of these two agents. While many mechanisms have been suggested to explain the actions of these two natural products,[26-41] it was and still is recognized that oil of oregano and monolaurin, possess the unique ability to break down the lipid capsules that surround and protect many bacteria, that cellular constituent which conveys resistance to commonly-used drugs.[42,43] Why is this important -- most likely crucially important? Many bacteria and viruses have protective lipid capsules: this includes COVID-19.[44] The potential of these two natural products, generally regarded as safe (GRAS), to destroy protective lipid envelopes surrounding microbial invaders and subsequently destroy them appears realistic in the present day and age.

To be more specific about earlier studies, not only did our work on the bacteria involve *in vitro* studies in Petrie dishes, but also included procedures on living mice.[1-3] In limited studies, protection of infected mice against *Staphylococcus aureus* with the two agents individually proved essentially the same as with the powerful antibiotic, Vancomycin.[2] Protection of roughly half of the mice from death occurred with both oregano oil and monolaurin. Since some viruses also have fatty capsules like bacteria, it was hypothesized that perhaps these agents had virucidal activities as well against lipid-enveloped viruses.[1-3,42,43] Suffice it to say, the late Shari Lieberman, late Mary Enig, and HGP wrote about the virucidal potential of monolaurin *way back when*.[18]

(Continued on next page)

The purpose of this present resurrected review is two-fold: first, to once more emphasize the vital potential of oil of oregano and monolaurin, the "devastating duo", in treating bacterial diseases -- especially those agents proven to overcome drug resistance; and second and more importantly, to make a case for their potential to become important safe and effective anti-virucidal agents particularly in combatting COVID-19.

Antibacterial Effects of Oil of Oregano and Monolaurin

The previous work with oregano and monolaurin reveals many critical aspects. General worldwide health problem caused by severe, hard-to-treat infectious diseases have long been with us. While the standard approach has been to use drugs, drugs have not proven to be a reliable complete solution. Far too many deadly microbes have built up resistance to many previously potent antibiotics as well as newer ones, despite the continuing development over time of more sophisticated antimicrobial agents. An additional troubling point is that many antimicrobial drugs have also been associated with severe adverse reactions. Accordingly, safe and effective antimicrobial agents with a broad spectrum to treat both prophylactically and therapeutically a wide variety of infections are needed. This is especially true for the treatment of many antimicrobial-resistant organisms like staphylococci [4-12] and tuberculosis.[13] Troublesome staphylococcal infections are a constant, insidious threat to hospitalized patients. Tuberculosis remains a technical and clinical challenge with drug-resistant forms becoming more prevalent throughout the world.[13,14] The potential use of many difficult-to-treat, life-threatening microorganisms as weapons of terrorism have further underscored the need for safe antimicrobial agents. To give an example of the latter, spores of *Bacillus anthracis* were used a few years back as a mass-casualty-producing weapon.[15-17]

To state the obvious, the best therapeutic antimicrobial agents cause virtually no adverse reactions, have a wide spectrum of activity, and are not likely to encounter resistance to their therapeutic effects over time. A number of natural products, specifically several essential oils and certain fats (monoglycerides), appear to possess some of these ideal characteristics.

Essential oils have been used to preserve foods since the days of the early explorers.[26] Therefore, it is not too surprising that they have been found to be effective against many pathogenic organisms.[26-32] Certain monoglycerides and fatty acids are also recognized to have antimicrobial potential.[24,25,34] Lauric acid is the main antiviral and antibacterial substance in human breast milk. Coconuts products and palm kernel oil are the major sources of this medium chain, saturated fatty acid. Monolaurin, the glycerol ester of lauric acid, is even more biologically active than lauric acid. The optimum antimicrobial activity for fatty acids and their corresponding monoglycerides is a chain length of C12.[24,25,34] Lauric acid (C12) has a greater antiviral activity than caprylic acid (C8), capric acid (C10) or myristic acid (C14).[24,25,34]

We performed a series of *in vitro* and *in vivo* studies to determine the potential of essential oils and the fat monolaurin alone or combined to treat a variety of organisms.[2,3] Of the 12 essential oils tested, oregano consistently proved to be the best for treating the organisms examined with cinnamon and sage being close seconds.[2,3] We also corroborated that the fat, monolaurin, is cidal to a great variety of organisms.[2,3]

We employed a micro-broth dilution technique to determine the susceptibility of various bacterial speciesto oil of oregano, other essential oils, and monolaurin.[2,3] Susceptibility was expressed as minimum inhibitory and/or minimum cidal concentration. The minimum inhibitory concentration was defined as the lowest concentration of agent required to arrest growth of fungus or bacteria at the end of 24-hours of incubation. Minimum cidal concentration was determined by subculturing a 0.01 ml aliquot of the medium drawn from the culture tubes after 48-hours on agar plates and incubated further for organism growth. The plates were scored for growth of the bacteria colonies. The lowest concentration of the antimicrobial agent causing negative growth (fewer than three colonies) was considered as the minimal cidal concentration.

Using the above methodology, we examined *in vitro* the cidal and/or static effects of oil of oregano, several other essential oils, and monolaurin on *Candida albicans*, *Staphylococcus aureus, Bacillus anthracis* Sterne (a model for *B. anthracis*)*, Escherichia coli, Klebsiella pneumoniae, Helicobacter pylori*, and *Mycobacterium terrae (*a model for *Mycobacterium tuberculosis).* Since oil of oregano consistently proved to be the most effective essential oil, we will limit our discussion to this particular essential oil. When examining bacteria, oil of oregano proved cidal to all tested organisms mentioned above with the exception of *B. anthracis* Sterne for which it was static.[2,3] Monolaurin was cidal to *S. aureus* and *M. terrae* but not to *E. coli* and *K. pneumoniae*. It has been indicated widely that monolaurin works principally against gram-positive organisms rather than gram-negative ones. Nevertheless, *H. pylori* were extremely sensitive to monolaurin unlike the other two gram-negative organisms. Similar to oil of oregano, monolaurin was static rather than cidal to *B. anthracis* Sterne.

(Continued on next page)

How can we put these results in perspective since many of us have observed test tube cures that never "panned out?" Accordingly, the necessary initial question we had to answer was as follows: would these natural substances work effectively *in vivo*? Fourteen mice were infected with *Staphylococcus aureus* and gavaged daily with oil of oregano, monolaurin, or combined oregano - monolaurin for 30 days.[2] The amount of bacterial agents administered was calculated based on the body weight of the mice. Control mice received daily gavages of either olive oil alone (negative control) or olive oil orally plus vancomycin (400 mcg) *i.p.* (positive control). The daily dose of oregano was 3.2 mg. Monolaurin was given at the same dose; and when both agents were combined, the same individual doses were used, i.e., 3.2 mg of each. The experiments were terminated at the end of 30 days. We found that oil of oregano and monolaurin are protective, at least to some extent, *in vivo.*[2] In the 14 rats used as control, *Staphylococcus aureus* (ATCC #14775) killed all the mice within seven days. In contrast, 43%-50% of the mice survived for thirty days after receiving individual daily gavages of vancomycin (7/14) oregano oil (6/14), and monolaurin (4/8). The survival with combined oregano oil and monolaurin was slightly better – 62.5% (5/8). Obviously, more studies are needed to establish whether a combination of natural products is superior to individual use, especially if higher doses of individual agents are used. Interestingly, no abscesses were found at post mortem; and *Staphylococcus aureus* could not be grown out of the kidneys of the 30-day survivors suggesting a cure.

What have other investigators shown? Essential oils, especially oregano, and the fat monolaurin are natural substances reported to have the ability to kill *Staphylococcus aureus* and other microbes in culture.[26-33] Along with oregano oil, cinnamon and clove were judged "very active" by examining their inhibitory effects on *Clostridium botulinum* 33A.[28] Also, antiviral actions of oregano and clove oils against RNA and DNA viruses have been reported.[42] Illustrating a potential mechanism of action, the outer protective membrane of the viruses was disintegrated after exposure to the oil of oregano as viewed by electron microscopy.[42] Important in our search for the best antimicrobials, most essential oils of spices are classified as GRAS (generally recognized as safe) indicating that consumers can eat them reasonably without fear.[28] Accordingly, the benefits/risks ratio of essential oils in treating microbes would seem to be very high.

A broth dilution method was used to determine the minimal inhibitory concentration of a series of fatty acid ester of polyhydric alcohols against gram-negative and gram-positive organisms.[34] Gram-negative organisms were not affected. Gram-positive organisms were affected to the greatest extent by monolaurin.[34] Monolaurin is effective in blocking or delaying the production of exotoxins by pathogenic gram-positive bacteria[35] and inhibits the synthesis of most staphylococcal infections and other exoproteins -- it does so at the level of transcription.[36] Monolaurin also inhibits the expression of virulence factors in *Staphylococcus aureus* and the induction of vancomycin resistance in *Enterococcus faecalis.*[37,38] Monolaurin further inhibits spore growth in milk.[36]

The proposed mechanism of action of these agents may indicate a wider spectrum of action. When the antichlamydial effects of several fatty acids and monoglycerides were studied by incubating *Chlamydia trachomatis* bacteria, the results indicate that the lipids kill the bacteria, possibly by disrupting the membranes of the elementary body.[39] Corroborating evidence is available from viral studies suggesting that the bactericidal effects are via disintegration of cell membranes by fatty acids[40-43] similar to a report of the action of monolaurin on viruses.[18,42]

To sum up, the bactericidal effects of oil of oregano, other essential oils, and monolaurin *in vivo* indicate a need for further studies to establish the importance of these natural products in combating pathogenic microbes, especially those resistant to antibiotics. It is also possible that these agents might also work well in the presence of antibiotics and make them more effective. Because of the potential for fewer adverse side effects with natural products compared to pharmaceuticals, the health care provider might eventually recommend taking them prophylactically to prevent future infections. Combining oil of oregano and monolaurin may produce additive effects, but more studies are necessary to determine if such exists. With true wisdom we proffered the following approximately 15 years ago, "Unfortunately, it is likely that the inability to profit greatly from their sales and the widespread prejudice of the medical community toward natural products will hamper the gathering of this necessary information in the near future."

Potential of Oregano and Monolaurin, to Become Important Safe and Effective Anti Virucidal Agents -- Particularly COVID-19.

So, we are at a point where we know that the *Devastating Duo* are effective against a variety of bacteria *in*

(Continued on next page)

vitro (on Petrie dishes) and *in vivo* against Staphylococcus aureus (Mouse Model). We further know that the favored explanation behind the beneficial effect is disintegration of the protective lipid capsule. Could it work against a virus with a protective lipid capsule? In the wake of the current viral pandemic, I (HGP) began to look over some of my old material and lo and behold found a study performed in my laboratory that I had completely forgotten. We had investigated the Respiratory Syncytial Virus (RSV) a lipid-encapsulated virus.

Human RSV, a member of the *Paramyxoviridae* family, is a major cause of acute upper and lower respiratory tract infections in infants, young children, and adults.[45-49] Serological evidence indicates that approximately 95% of children have been exposed to RSV by 2 years of age, and 100% of children have been exposed by the time they reach adulthood.[4] In a given year, approximately 91,000 infants are hospitalized with RSV infection in the United States. These infections are responsible for 40% to 50% of hospitalizations for pediatric bronchiolitis and 25% of hospitalizations for pediatric pneumonia.[45,46]

A HEp-2 culture based upon viral syncytial assay was established. This assay is based on the concept that when an RSV particle infects the human lung epithelial cells (monolayer), it replicates and invades the adjoining or surrounding cells. Infected cells fuse to form a syncytium (cytopathic effect). These infected centers (syncytia) can be visually examined either directly or under a phase contrast microscope.

Monolayers of HEp-2 cells were grown for 80% confluency in 12 well tissue culture plates. Monolayers were washed with serum free medium, and layered with various dilutions of RSV in 50 mcl of MEM . The plates were gently rocked at room temperature for one hour, to facilitate adsorption of the viral particles. Complete EMEM medium (one ml) containing, the control positive serum (10%) and 0.35% methylcellulose was added and incubated at 37 ^{o} C in air supplied with 5% CO_2 for four days. Plates were monitored microscopically from day three for the appearance of infectious centers. On day four, plates were removed, 1 ml of 10% formalin was added to fix the monolayers (20 min), washed and stained with haematoxylin, and counter stained with eosin.

Using this cytopathic assay system, preliminary experiments to determine the effects of oregano oil and monolaurin in comparison with Ribavirin (VWR Scientific) on the infection and the development of syncytia were conducted. In that, monolayers of HEp-2 cells (80% confluent) (duplicate wells) were adsorbed with the infectious 50 mcl of RSV, as described above. After the incubation for one hour at the room temperature, 1ml of medium containing, 0.0, 50.0 mcl of 50% ethanol and 1.0% Tween 20 (solvent control), solvent with 0.5, 0.25 and 0.125 mg/ml of oregano oil, or monolaurin was added and returned to the incubator. As positive control, 5.0, 2.5 and 1.25 mcg /ml of Ribavirin were also included. On day 5, the cells were formalin fixed, stained with H and E, and evaluated for the appearance of syncytia (*Table 1*).

Table 1. Effect of Oregano oil and Monolaurin on the infection HEp-2 cells by RSV *in vitro*

Groups tested	Cytopathic effect
1.Control uninfected	None
2.Solvent control	None
3.Virus alone (no treatment)	+ Too many foci
4.Ribavirin 5.0 mcg/ml	None
5.Ribavirin 2.5 mcg/ml	None
6.Ribavirin 1.25 mcg/ml	+ A few foci
7.Oregano oil 0.5 mg/ml	None
8.Oregano oil 0.25 mg/ml	None
9.Oregano oil 0.125 mg/ml	+ A few Foci
10.Monolaurin 0.5 mg/ml	None
11.Monolaurin 0.25mg/ml	None
12.Monolaurin 0.125mg/ml	+ A few Foci

Monolayers of HEp-2 cells at 80% confluency (in duplicates) were infected with 50 mcl of 10^{-4} dilutions of the virus stock (approx.6 X 10^2 PFU).

When one applies the virus to lung tissue in Petrie dishes, the same formations are produced in the presence of the live RSV[1]. Similar to the effects of a drug, Ribavirin, both oregano and monolaurin were able to destroy the ability of the virus to produce syncytial formation (*Table 1*). This strengthens the postulate that oregano and monolaurin can destroy lipid-encapsulated viruses.

Of interest, the Philippine government is conducting extensive clinical trials examining a variety of coconut oil products to combat COVID-19.[50] One of the constituents to be tested is monolaurin. Interestingly, the human body already contains monolaurin but not enough to combat major diseases. Could we increase production? Lauric acid is a major ingredient in coconut material.[51] One theory is that consuming enough lauric acid from coconut products will force a sufficient amount of monolaurin to be produced internally. In our study, we did not find this procedure to be effective[51]

(Continued on next page)

So, we recommend using monolaurin directly.

Concluding Thoughts

During a period of economic stress created by a pandemic, consideration to allow previously quarantined individuals to return once again to their former work after curtailing disease spread by continuing to consume safe, effective, prophylactic anti-virucidal agents is realistic and should be checked out. Although this report was written with COVID-19 principally in mind, further use of these two natural, nontoxic dietary supplements should be considered in the case of other unique viral agents and drug resistant bacteria.

About the Authors

Harry G. Pruess, MD, MACN, CNS
Department of Biochemistry
Georgetown University Medical Center
Washington, D.C. 20057

Rich Scheckenbach
Breakthrough Nutrition
Camas, Washington 98607

Cass Ingram, DO
North American Herb and Spice
Waukegan, IL 60089

Jeffrey M. Pruess, MD
Emergency Department
Veterans Administration Medical Center
Salem, VA 24153

Much of this this work was carried out by Dr. Vijaya Manohar, PhD and Mr. Bobby Echard, MT. Dr. Manohar was greatly aided in the settig up of the RSV assay by Dr. Barney Graham, VRC, NIH. The material in Table 1 was performed in an attempt to gather evidence for future funding which never materialized. Even though preliminary in nature, circumstances today prompted the decision to release it.

References:

1. Preuss HG, Echard B, Zonosi RR: The potential for developing natural antibiotics: Examining oregano and monolaurin. The Original Internist 12:119-124, 2005.
2. Preuss HG, Echard B, Dadgar A, Talpur N, Manohar V, Enig M, Bagchi D, Ingram C: Effects of essential oils and monolaurin on Staphylococcus aureus: in vitro and in vivo studies. Toxicology Mechanisms and Methods 15:279-285, 2005.
3. Preuss HG, Echard B, Enig M, Elliot T, Brook E: Minimum inhibitory concentrations of herbal essential oils and monolaurin for gram positive and negative bacteria. Molec Cellular Biochem 272:29-34, 2005.
4. US Congress, Office of Technology Assessment. Impacts of antibiotic resistant bacteria. OTA-H-629. Washington DC: US Government Printing Office, 1995.
5. Ayliffe GA: The progressive intercontinental spreads of methicillin-resistant Staphylococcus aureus. Clin Infect Dis 24(Suppl 1):S74-S79, 1997.
6. Cunha BA: Strategies to control antibiotic resistance. Semin Respir Infect 17:250-258, 2002.
7. Edmond MB, Wenzel RP, Pasculle AW: Vancomycin-resistant Staphylococcus aureus: perspectives on measures needed for control. Ann Intern Med 124:329-334, 1996.
8. Waldvogel W: New resistance in Staphylococcus aureus. N Eng J Med 340:556-557, 1999.
9. Burnie J, Matthews R, Jiman-Fatami A, Gottardello P, Hodgetts S, D'arcy S: Analysis of 42 cases of septicemia caused by an epidemic strain of methicillin-resistant staphylococcus aureus: evidence of resistance to vancomycin. Clin Infect Dis 31:684-689, 2000.
10. Hiramatsu K, Hanake H, Ino T, Yabuta K, Oguri T, Tenover FC: Methicillin-resistant Staphylococcus aureus clinical strain with reduced vancomycin susceptibility. J Antimicrob Chemother 40:135-136, 1997.
11. Sieradzki K, Roberts RB, Haber SW, Tomasz A: The development of vancomycin resistance in a patient with methicillin-resistant Staphylococcus infection. N Engl J Med 340:517-523, 1999.
12. Denis O, Nonhoff C, Byl B, Knoop C, Bobin-Dubreux S, Struelens MJ: Emergence of vancomycin-intermediate Staphylococcus aureus in a Belgian hospital: microbiological and clinical features. J Antimicrob Chemother 50:383-391, 2002.
13. Horsburgh Jr, CR, Felman S, Ridzon R: Practice guidelines for the treatment of tuberculosis. Clinical Infectious Diseases 31**,** 633-639, 2000.
14. Remis, RS, Jamieson F, Chedore P, Haddad A, Vernich L: Increasing drug resistance of Mycobacterium tuberculosis isolates in Ontario, Canada, 1987-1998. Clinical Infectious Diseases 31:427-432, 2000.
15. Brook I, Elliott TB, Pryor 2nd HI, Sautter TE, Gnade BT, Thakar JH, Knudson JH: In vitro resistance of Bacillus anthracis Sterne to doxocycline, macrolides and quinolones. International Journal of Antimicrobial Agents 18, 559-562, 2001.
16. Brook I, Elliott TB, Harding RA, Bouhaouala SS, Peacock SJ, Ledney GD, Knudson GB: Susceptibility of irradiated mice to Bacillus anthracis Sterne by the intratracheal route of infection. Journal of Medical Microbiology 50**,** 702-711, 2001.
17. Choe CH, Bouhaouala, SS, Brook, I, Elliot TB, Knudson GB: In vitro development of resistance to ofloxacin and doxycycline in Bacillus anthracis Sterne. Antimicrobial Agents and Chemotherapy 44:1766, 2000.
18. Lieberman S, Enig MG, Preuss HG: A review of monolaurin and lauric acid: natural virucidal and bactericidal agents. Alternative and Complementary Therapies 310-314, December 2006.
19. Goldman Eric: Oregano oil proves effective against Coronavirus. Tuesday December 2009. https://holisticprimarycare.net/topics/topics-h-n/infectious-disease/117-oregano-oil-proves-effective-against-

(Continued on next page)

coronavirus.html
20. Santoyo S, Jaime L, Garcia-Risco R, Ruiz-Rodriguez A, Reglero G: Antiviral properties of supercritical CO_2 extracts from oregano and sage. 17:1150-1161, 2014.
21. Beck M: Oil of oregano: Weapon against flu? https://www.todaysdietitian.com/news/exclusive0110.shtml
22. Pilau MR, Alves SH, Welblen R, Arenhart S, Cueto AP, Lovato LT: Antiviral activity of the Lippia graveolens (Mexican Oregano) essential oil and its main compound carvacrol against human and animal viruses. Braz J Microbiol 42: Dec 2011.http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1517-83822011000400049
23. Gilling DH, Kitajima M, Torrey JR, Bright KR: Antiviral efficacy and mechanisms of action of oregano essential oil and its primary component carvacrol against murine novovirus. J Applied Microbiol 116:1179-1163, 2014.
24. Kabara JJ, Swieczkowski DM, Conley AJ, Truant JP: Fatty acids and derivatives as antimicrobial agents. Antimicrob Agents Chemother 2:23-28, 1972.
25. Kabara JJ, Vrable R: Antimicrobial lipids: Natural and synthetic acids and monoglycerides. Lipids 12:753–759, 1977.
26. Kim J, Marshall MR, Wei C-I: Antibacterial activity of some essential oil components against five foodborne pathogens. J Agric Food Chem 43:2839-2845, 1995.
27. Carson CF, Cookson BD, Farrelly HD, Riley TV: Susceptibility of methicillin resistant Staphylococcus aureus to the essential oil of Melaleuca alternifolia. J Antimicrobial Chemotherapy 35:421-424, 1995.
28. Ismaiel A, Pierson MD: Inhibition of growth and germination of C botulinum 33A, 40B, and 1623E by Essential oil of spices. J Food Sci 55:1676-1680, 1990.
29. Mansour M, Bouttefroy AD, Linder M, Milliere JB: Inhibition of Bacillus licheniformis spore growth in milk by nisin, monolaurin and ph combinations. J Appl Microbiol 86:311-324, 1999.
30. Kivanc M, Akgul A, Dogan A:. Inhibitory and stimulatory effects of cumin, oregano and their essential oils on growth and acid production of Lactobacillus plantarum and Leuconostoc mesenteroides. Int J Food Microbiol 13:81-86, 1991.
31. Hammer KA, Carson CF, Riley TV: Antimicrobial activity of essential oils and other plant extracts. J Appl Microbiol. 86:985-990, 1999.
32. Sivropoulus A, Papanikolaou E, Nikolaou C, Kokkini,S, Lanaras T, Arsenakis M: Antimicrobial and cytoxic activities of origanum essential oils. J Agric Food Chem 44:1202-1205, 1996.
33. Hitokoto H, Morozumi S, Wauke,T, Sakai S, Kurata H: Inhibitory effects of spices on growth and toxin production of toxigenic fungi. 39:818-822, 1980.
34. Conley AJ, Kabara JJ: Antimicrobial action of esters of polyhydric alcohols. Antimicrobial agents and chemotherapy 4:501-506, 1973.
35. Schlievert PM, Deringer J, Kim MH, Projan SJ, Novick RP: Effect of glycerol monolaurate on bacterial growth and toxin production. Antimicrobial Agents and Chemotherapy 36:626-631, 1992.
36. Projan SJ, Brown-Skrobot S, Schlievert PM, Vandenesch F, Novick RP, Glycerol monolaurate inhibits the production of B-lactamase, toxic shock syndrome toxin-1, and other Staphylococcal exoproteins by interfering with signal transduction. J Bacteriol 176:4204-4209, 1994.
37. Ruzin A, Novick RP: Equivalence of lauric acid and glycerol monolaurate as inhibitors of signal transduction in Staphylococcus aureus 182:2668-2671, 2000.
38. Ruzin A, Novick RP: Glycerol monolaurate inhibits induction of Vancomycin resistance in Enterococcus faecalis. J Bacteriol 180:182-185, 1998.
39. Bergsson G, Arnfinnsson J, Karlsson SM, Steingrimsson O, Thormar, H: In vitro inactivation of Chlamydia trachomatis by fatty acids and monoglycerides. Antimicrob Agents Chemotherap 42:2290-2294, 1998.
40. Isaacs CE, Kashyap S, Heird WC, Thormar H: Anitiviral and anti bacterial lipids in human milk and infant formula feed. Arch Dis Child 65:272-273, 1991.
41. Isaacs CE, Thormar H: The role of milk-derived antimicrobial lipids as antiviral and antibacterial agents. Adv Exp Med Biol 310:159-165, 1991.
42. Siddiqui YM, Ettayebi M, Haddad A, Al-Ahdal MN: Effect of essential oils on enveloped viruses: antiviral activity of oregano and clove oils on herpes simplex virus type 1 and Newcastle disease virus. Med Sci Res 24:185-186 1996.
43. Thormar H, Isaacs CE, Brown HR, Barshatzky MR, Pessolano T: Inactivation of enveloped viruses and killing of cells by fatty acids and monoglycerides. Antimicrob Agents Chemother 31:27-31, 1987.
44. Velevan TP, Meyer CG: The COVID-19 epidemic. Trop Med Int Health 25:278-280, 2020.
45. McIntosh K: Respiratory syncytial virus, p. 691-705. In A Evans and R Kaslow (ed.), Viral infections of humans, 4th ed. Plenum Medical Book Company, New York, N.Y., 1997.
46. Hall C: Respiratory syncytial virus: a continuing culprit and conundrum. J. Pediatr. 135:2-7, 1999.
47. LaVia W, Grant S, Stutman H, Marks M: Clinical profile of pediatric patients hospitalized with respiratory syncytial virus infection. Clin. Pediatr. 8:450-454, 1993.
48. Pastey M, Gower T, Spearman P, Crowe P, Graham B: A RhoA-derived peptide inhibits syncytium formation induced by respiratory syncytial virus and para influenza virus type 3. Nat. Med. 6:35-40, 2000.
49. Peebles Jr, RS, Graham BS: Pathogenesis of respiratory syncytial virus infection in the murine model. Proc Am Thorac Soc 2(2):110-115, 2005.Lim GY: Coconut and COVID-19: Philippines studying antiviral properties of coconut oil as potential treatment. https://www.nutraingredients asia.com/Article/2020/03/11/Coconut-and-COVID-19-Philippines-studying-antiviral-properties-of-coconut-oil-as-potential-treatment
50. Manohar V, Echard B, Perricone NV, Preuss HG: In vitro and in vivo effects of two coconut oils in comparison to monolaurin on Staphylococcus: Rodent studies J Medicinal Foods (16:499-503, 2013.

◆

Optimox

Nutrition Council

ad

Nutrition Council

ad

BIOCIDEN

Lipoic Acid: Another Metal Chelator?

by: Eleonore Blaurock-Busch, PhD

By lipoic acid (LA), also known as α-lipoic acid and alpha lipoic acid (ALA) is an organosulfur compound derived from octanoic acid. It is a natural and sulfur-containing fatty acid, produced by humans and animals and is essential for aerobic metabolism. ALA products are manufactured and available as a dietary supplement or pharmaceutical drug. It is considered a natural anti-oxidant and anti-inflammatory compound that protects the brain, helps with energy production and carbohydrate breakdown, decreases the risk of cardiovascular disease, and alleviates pain. There is evidence that ALA can improve the function and conduction of neurons in diabetes.

ALA is lipophilic and as such credited with crossing the blood brain barrier. Trials by the British Multiple Sclerosis Society found that treatment with lipoic acid reduced brain atrophy by 68% compared with placebo, although there was no significant difference in disability scores. During Phase 2, researchers are testing if a daily dose of 1200mg Lipoic acid can help to maintain levels of mobility over two years. (MS Society 2019)

Most evidence suggests that alpha-lipoic acid, at doses of at least 300mg/day orally for 4-8 weeks improves insulin sensitivity, fasting blood glucose levels, and glucose clearance in patients with type 2 diabetes. Results showed that fasting blood glucose and HbA1c trended to decrease in a dose-dependent manner. (https://diabetesdoctor.com/pages/alpha-lipoic-acid-research)

Professor Almomen gives a daily oral dose of 600 mg for those who are less than 40 kg, 1200 mg for those who are 40-80 kg and 1800 mg for those who are over 80 kg. He recommends a urine collection time of 4-6 hours after intake of Alpha Lipoic Acid.

Some clinicians use LA or ALA to detoxify the brain, but we could not locate research data providing reliable information. We therefore evaluated data from samples taken after the ALA challenge and compared mean and standard deviation to values obtained from baseline urines. The 76 'challenge samples' had been received from Prof. Almomen and other clinicians. The baseline samples (N=1820) had been received from a number of chelation therapy clinics of Germany and elsewhere.

Table 1: Comparing urine metal excretion: ALA vs baseline urine

Values in µg/g creatinine, except Zinc (Zn)

	Baseline X		ALA X		
N=1820	Baseline Stdev		Detection Limit (DL)		
N=76	ALA Stdev				
Ag	<DL	0.75	<DL	<DL	0.5
Al	6.3	71.04	6.3	17,12	5.00
As	9.68	115.98	**14.45**	**58.58**	0.35
Ba	1.68	25.43	1.63	3.07	0.10
Be	<DL	<DL	<DL	<DL	0.15
Bi	<DL	1.56	<DL	0.69	0.05
Cd	0.19	0.43	0.17	0.14	0.10
Ce	<DL	0.25	<DL	<DL	0.10
Cr	0.59	1.51	<DL	0.85	0.50
Cs	4.94	11.49	5.4	7.80	0.02
Ga	0.08	0.22	0.08	0.13	0.05
Hg	<DL	0.82	**0.84**	**6.53**	0.40
La	<DL	0.05	<DL	<DL	0.01
Mn	1.74	44.3	3.12	3.47	0.75
Ni	3.88	7.05	4.20	4.02	0.50
Pb	0.65	4.35	**0.79**	**2.37**	0.30
Pd	<DL	1.1	<DL	1.24	0.65
Pt	<DL	18.16	<DL	<DL	0.10
Sb	<DL	0.54	<DL	<DL	0.10
Sn	0.36	2.44	0.29	0.43	0.20
Tl	0.16	1.06	0.15	0.21	0.05
U	<DL	<DL	<DL	<DL	0.03
V	0.09	0.83	0.06	0.21	0.05
Zn mg/g Crea	0.25	0.71	0.21	0.51	0.01

Data evaluation:

We evaluated 76 data sets that had been obtained from patients who had received lipoic acid alone and compared mean and standard deviation to those obtained from baseline urines (see Table 1). The mean urine concentration of mercury was considerably higher than that of the unchallenged baseline urines. The arsenic and lead excretion also increased, possibly showing promise.

About the Author

Eleonore Blaurock-Busch PhD has founded the US toxicology Laboratory (Trace Minerals International, Inc.) of Boulder, Colorado in 1984 and (Micro Trace

(Continued on page 75)

Moss

Thoughts at Large:
Controversies in Clinical Nutrition and Functional Medicine

Issue #16
RESEARCH SUPPORTING CLINICAL USE OF SUPPLEMENTAL PANCREATIC ENZYMES

by: Jeffrey Moss, DDS, CNS, DACBN

Introduction

As virtually all of you well know, a decades-long staple of clinical nutrition practice has been the use of pancreatic enzyme supplementation for patients experiencing all aspects of GI dysfunction ranging from gas and bloating to small intestinal bacterial overgrowth (SIBO) to IBS. However, despite many positive anecdotal reports of efficacy in the clinical nutrition market over the years, supplementation of pancreatic enzymes to assist in digestive function has often been described by many, if not most in the health care community using terms that range from "unscientific" to "quackery" to "voodoo medicine." Why is this? For me, there are two reasons. First, there has been the traditional difficulty of objectively determining deficiency of exocrine pancreatic function beyond symptomatology. Second, there has been a lack of published papers demonstrating clinical efficacy with patients who have been determined to have suboptimal exocrine pancreatic function.

The Science on Assessment and Treatment of Exocrine Pancreactic Dysfunction

Because of this I was glad to encounter the recently published paper "Management of exocrine pancreatic insufficiency in children" by Sankararaman et al (Sankararaman S et al. *Nutr Clin Pract*, Vol. 34, Suppl 1, pp. S27-S42, October 2019) which addresses both the issues of objective assessment and demonstration of clinical efficacy of pancreatic enzyme supplementation. Therefore, I would now like to review this paper in detail by featuring several quotes and commentary.

Before beginning my review, though, it should be noted that the patient population discussed in this paper is not the usual patient population typically seen by nutritional and functional medicine practitioners – adult, chronically ill individuals. Instead, the patient population discussed in the Sankararaman et al paper is children with cystic fibrosis who often experience pathologic pancreatic enzyme insufficiency. Despite this, I do feel that much of the information provided in the paper can easily be extrapolated to our typical patient population that experience more subtle ranges of exocrine pancreatic insufficiency. The quotes that I feel most readily apply to our usual chronically ill patients will be those that I feature.

To begin my review, I would like to feature some quotes that discuss exocrine pancreatic function and exocrine pancreatic insufficiency in general terms.

First, consider the following:
"Exocrine pancreatic insufficiency (EPI) is defined as a decrease in the secretion of pancreatic enzymes, bicarbonate, or both resulting in the malabsorption of nutrients. The pancreas has a large physiological reserve, and a reduction of secretion < 10% of the normal output results in the characteristic symptoms of chronic diarrhea, steatorrhea, and poor weight gain."

The next quote highlights the problem of assessment, one of the main reasons, as I mentioned above, EPI is often not regarded seriously by the health care community as a legitimate health concern:
"The diagnosis of EPI can be challenging, as symptoms may not be recognized."

Of particular concern is the impact of EPI on nutritional status:
"EPI can negatively impact health and well-being through subclinical maldigestion and malabsorption of both macronutrients and micronutrients, particularly the fat-soluble vitamins."

Is replacement therapy efficacious? Despite the opinion of many in the allopathic health care community, the authors are unequivocal in their support of what we have been stating for years about this modality:
"Pancreatic enzyme replacement therapy (PERT) is the cornerstone of management and offers both symptomatic relief and improvement in nutrient absorption."

The next quote discusses basic pancreatic function more directly:
"The pancreas plays an indispensable role in the digestion of macronutrients. Macronutrient digestion is a prerequisite for subsequent absorptive processes; in other words, maldigestion leads to malabsorption. The pancreas secretes enzymes to digest macronutrients via hydrolysis. The main enzymes of these processes are amylase for carbohydrate digestion, lipase for fat digestion, and proteases (trypsinogen, chymotrypsinogen) for protein digestion. Lipase and amylase are se-

(Continued on next page)

creted in active form, and proteases are secreted as pro -enzymes that are converted to active forms in the proximal small bowel. Even though pancreatic enzymes are involved in the digestion of all forms of macronutrients, the major impact of EPI is on fat digestion."

The next quote makes it clear why a discussion on exocrine pancreatic dysfunction is applicable beyond the concerns of the cystic fibrosis community:
"Secondary EPI is due to nonpancreatic reasons such as small-bowel inflammation and asynchrony in the digestive process. Inflammatory bowel disease, celiac disease, and other conditions with proximal small-bowel mucosal inflammation can result in EPI…"

As we all know, the conditions described in the above quote are highly prevalent in the chronic ill patient population we typically encounter.

The next quote provides more detail on the symptoms that are typically associated with EPI:
"Regardless of the underlying etiology, the clinical manifestations of untreated EPI…often include loose stools, steatorrhea, abdominal pain, excessive gas, and poor growth. Steatorrhea, or the presence of excess fat in the stools, is characterized by loose, bulky, greasy, and particularly foul-smelling stools."

The next few quotes are particularly valuable clinically because they address one the main issues mentioned above that has prevented the health care community from universally accepting EPI as a legitimate health care concern, difficulty with assessment. As you will see, low levels of fecal elastase-1 (FE-1), which is now routinely included in stool analysis profiles such as the one I currently advocate, the GI-MAP test from Diagnostic Solutions, is an excellent determinant of EPI:
"Among the indirect tests, FE-1 is more sensitive and utilized for screening EPI. The European Society for Clinical Nutrition and Metabolism (ESPEN)-European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN)-European Society for Cystic Fibrosis (ECFS) guidelines recommend annual testing of FE-1 in pancreatic-sufficient CF patients. The testing should be done earlier in symptomatic patients."

The next quote provides cut-off values for FE-1:
"An FE-1 value of <200 µg/g of collected stool is conventionally used as a cutoff for EPI; a value of 100-200 µg/g (slightly low) is indicative of mild EPI, and <100 µg/g (low) is indicative of severe EPI."

However, as with all lab tests, it is not without limitations. Sankararaman et al discuss these limitations in the next quote:
"Clinicians should be aware of the limitations of FE-1. It is less sensitive in patients with mild EPI. Low FE-1 does not differentiate whether EPI is due to primary or secondary causes. Also, a solid or semisolid stool is recommended for testing FE-1. If the stool is loose, it should not be used, as the result may falsely indicate EPI because of a dilution of enzyme concentration."

The next quote provides more information on clinical interpretation of FE-1 levels:
"A high normal value probably indicates no significant EPI, and follow-up testing is recommended (repeat FE-1 every year or when needed). If the value is <200 µg/g, the testing should be repeated. Two low values of FE -1 (<100 µg/g) is probably consistent with EPI."

Authors' Comments on Treatment

Of course, the foundation of treatment is pancreatic enzyme supplementation:
"Currently…pancreatic enzymes (also referred to as pancrealipase) are the mainstay of EPI management. If adequate pancreatic enzyme replacement therapy (PERT) is provided, fat absorption is near correction."

Along with improved fat absorption improved digestion and absorption of fat-soluble vitamins must also be emphasized:
"Fat-soluble vitamins follow the same pathway for absorption as dietary fat, and hence, patients with EPI are predisposed to deficiencies of these vitamins. The main goals of EPI treatment included optimization of maldigestion with improvement in nutrient absorption. This enhances the overall nutrition status and concomitantly provides reduction in symptoms and improvement in quality of life and survival."

What else can be stated about the benefits of PERT beyond symptom resolution? Sankararaman et al state:
"Apart from amelioration of symptoms, PERT has been objectively noted to improve the coefficient of fat absorption and coefficient of nitrogen absorption and decrease fecal weight with no significant adverse events, compared with placebo. All current pancrealipase preparations are porcine in origin and available in various formulations…"

Are there any limitations in terms of the types of foods that would qualify for PERT supplementation? According to the authors:
"PERT should be given with all food, including breast milk, infant formulas, milk, and nutrition supplements."
Are there situations where PERT may be ineffective?
"In patients with persistent symptoms and signs of exocrine pancreatic insufficiency (EPI) despite being pre-

(Continued on next page)

scribed an appropriate dosage of PERT, reasons for the nonresponse could include missed doses, improper storage of enzymes, expired enzymes, mistiming of PERT administration (taking PERT after meals)…and non-EPI-related conditions (eg, excessive juice intake in toddlers."

Are there risks of side effects with PERT administration?
"PERT is generally well tolerated, and side effects are rare. GI and rare allergic reactions have been reported."

Is it possible to overdose on PERT? Sankararaman et al point out:
"With very high doses of PERT, a rare but serous complication called fibrosing colonopathy has been reported. Between 1990 and 1994, there were 35 cases of histologically confirmed cases of fibrosing colonopathy. This complication has been reported mostly in individuals with cystic fibrosis. Doses exceeding 6000 lipase units/kg body weight per day/meal were associated with this disorder."

What are the symptoms of fibrous colonopathy?
"Symptoms include abdominal pain, emesis, persistent diarrhea, poor weight gain, or loss of weight."
To avoid fibrous colonopathy, the authors recommend the following dosing:
"To prevent this complication, avoid doses exceeding 2500 lipase units/kg body weight/meal or 10,000 lipase units/kg body weight/day."

As far as I know, none of the pancreatic enzyme products produced by major professional supplement manufacturers contain enzyme doses that even come close to the amounts mentioned in the above quote.

More Detail on Exocrine Pancreatic Insufficiency (EPI) and Fat-Soluble Vitamin Deficiency

Sankararaman et al next go into more detail on the relationship between EPI and fat-soluble vitamin deficiency with this overview:
"Vitamin A, D, E, and K deficiencies are commonly encountered in untreated EPI patients; monitoring and supplementation are necessary. Fat-soluble vitamin malabsorption occurs with patients with EPI because of shared pathogenesis of fat malabsorption in the absence of pancreatic lipase. Optimal digestion and absorption of fat-soluble vitamins may not be achieved in patients with EPI with just PERT and without supplementation of fat-soluble vitamins."
Because of the above, all patients with EPI should be evaluated for fat-soluble vitamin deficiency and supplemented when necessary:
"For this reason, all patients with EPI should be regularly screened for fat-soluble vitamin deficiencies and also should take supplements for fat-soluble vitamins."

Next, the authors discuss key points about the fat-soluble vitamins individually. Of particular note are the comments on vitamin D:
Vitamin D – "Low levels in patients with EPI can occur because of multiple reasons such as decreased absorption, reduced sunlight exposure, decreased intake of vitamin D-rich foods, and insufficient supplementation with fat-soluble multivitamins and/or PERT."

EPI and Minerals

As was mentioned above, EPI can result in excessive fat in the stool (steatorrhea). This, in turn, can have an adverse impact on calcium metabolism. Sankararaman et al comment:
"In the setting of steatorrhea, calcium is poorly absorbed in the bowel. This can negatively impact bone health and also increases the risk of kidney stone formation (calcium oxalate stones)."

Some Final Thoughts

What I hope has become obvious is that I am very much in a "back to basics" mode lately in my approach to patient care when using a functional medicine approach. I find it interesting and ironic, though, that one of the most basic and foundational modalities in clinical nutrition and functional medicine, digestive enzyme replacement therapy, has never attained broad-based acceptance in the health care community, mainly due to the difficulties in proving that exocrine pancreatic insufficiency is a legitimate concern in the average chronically ill patient.

Fortunately, now that we have 21st century assessment modalities such as the well documented fecal elastase test at our disposal, our critics can no longer regard our common practice of digestive enzyme supplementation as anecdotal, unscientific quackery. Therefore, for those of you who do not regularly consider the use of products containing pancreatic enzymes with your chronically ill patients, particularly for those patients with GI dysfunction who are not responding as you might like to your typical supplemental protocols, you may want to consider employing diagnostic modalities such as the GI-MAP stool analysis. If the results demonstrate low fecal elastase, there is every reason to be optimistic that supplementation with pancreatic enzymes will assist in helping you attain the clinical results both you and your patients desire. ◆

Rob Pix for Live Streaming

CD/DVD List

Biotics

Three Genes Everyone Should Know About

by: Robert G. Silverman, DC, DACBN, DCBCN, MS, CCN, CNS, CSCS, CIISN, CKTP, CES, HKC, FAKTR

1.) **COMT** (catecholamine O-methyl transferase) is an enzyme used in many different tissues. But its job in the brain (specifically around dopamine) is the one that bears the most attention.

When we are stressed, whether it is physical stress (running to catch a flight) or perceived stress (worrying about uncompleted tasks), our body enters fight-or-flight mode, producing hormones such as dopamine, epinephrine, and norepinephrine to help us deal with the stress.

Once the stressor has ended or diminished, the brain has to break these hormones down. Their job is done, and it's time to get rid of them. This is where COMT comes into play.

There are three genetic forms of the COMT enzyme: fast, slow, and medium.

About 20 percent of people have the fast form, which means they break down their dopamine three to five times faster than people with the slow form. Some 30 percent of people have the slow form, which means they break down their dopamine 40 percent slower than those with the fast form.

The rest of the population has the medium form, which means their dopamine levels will fall in an in-between range.

Research has shown that people with the fast COMT enzyme tend to be risk takers, procrastinators, more prone to addiction, and may seek out stressful situations. But they often have greater flexibility switching between tasks. These people have been dubbed "warriors."

In contrast, people with the slow COMT enzyme may feel more overwhelmed, be more sensitive to pain, and have a greater stress or worry response (which could lead to anxiety). However, they tend to have greater focus on tasks, increased creativity and improved phase II sleep. These people are often called "worriers."

Understanding this information about your patient's COMT status can help you understand why they react in certain ways to situations.

2.) APOE is another gene that has received a lot of attention for its role in the development of Alzheimer's disease. The job of this gene is to code for a transporter (apolipoprotein E) that moves cholesterol around the body. It helps get rid of beta-amyloid. Too much beta-amyloid in the brain can lead to plaques that are thought to trigger the development of dementia and Alzheimer's.

Research also suggests this gene can lead to changes in the way the brain handles glucose (sugar), and cholesterol transport in the brain, leading to increased oxidative stress.

The APOE gene comes in three different forms: ApoE2, ApoE3, and ApoE4. These are determined by the alleles you inherit from each parent. For example, if you get an E4 allele from your mom and you get an E4 from your dad, then you are considered a E4/E4

Approximately 70 percent of the population are APOE3, while some 10 percent are APOE2, and about 20 percent APOE4.

The APOE4 form has been associated with increased cardiovascular risk and the development of Alzheimer's and dementia. More specifically, having one APOE4 allele increases the chance of developing Alzheimer's by three times.

Thankfully, even if your patients do have APOE4, they can support this gene and decrease their chance of becoming afflicted with Alzheimer's through some of the following lifestyle changes: limiting alcohol, quitting smoking, and including lots of omega-3 fatty acids in their diet.

3.) HFE codes for human homeostatic iron regulator protein. This protein interacts with another protein called hepcidin, which monitors how much iron comes into the body from diet and if the body needs to release extra iron from its stores.

A variant in this gene makes hepcidin less sensitive to

(Continued on next page)

how much iron is being absorbed or released from body stores. This condition, which increases the amount of iron in the body, is called hemochromatosis. If a patient has this gene, it is important to monitor their iron levels, especiallytheir ferritin levels; a goal ferritin range is 50-150ng/dl.

Men and postmenopausal women with this gene are especially at risk for excess iron in the body (because they don't have a way to get rid of iron), which can increase the amount of iron deposits in organs and lead to oxidative stress.

The good news is that a trip to a local Red Cross to donate blood can help decrease iron levels (if your patient's blood tests show high ferritin levels) *and save up to three lives in the process.*

About the Author:

Dr. Robert Silverman is a chiropractic physician, clinical nutritionist, national/international speaker, author of Amazon's #1 bestseller *"Inside-Out Health",* founder and CEO of Westchester Integrative Health Ctr.

The ACA Sports Council named Dr. Silverman "Sports Chiropractor of the Year" in 2015. His extensive list of educational accomplishments includes six different degrees in clinical nutrition.

Dr. Silverman is on the advisory board for the Functional Medicine University and is a seasoned health and wellness expert on both the speaking circuits and within the media, as well as a frequent health expert contributor on national blogs such as Consumer Health Digest. He has appeared on FOX News Channel, FOX, NBC, CBS, ABC, The Wall Street Journal, NewsMax. He was invited as a guest speaker on "Talks at Google" to discuss his current book.

Dr. Silverman was the principle investigator on a Level 1 laser FDA study. His new book, *Superhighway to Health* is recently published.

◆

BLAUROCK-BUSCH: *continued from page 66*

Minerals) of Hersbruck, Germany in 1975. She is Research Director at Micro Trace Minerals Laboratory in Germany, founding member and co-chairman of the International Association of Trace Element Research and Cancer, and organizer of the first East-West World Congress on Trace Element and Cancer, held in Beijing, China in 1996. She is advisor to the German Medical Association of Clinical Metal Toxicologists and a member of the British Society for Ecological Medicine.

She has lectured worldwide at various universities and learning institutions and was a frequent guest speaker at radio and TV shows in the US, Germany and elsewhere. She was and is instrumental in environmental and laboratory research projects in metal toxicology, including epidemiological studies on cancer and autism, and continues to evaluate the toxic burden of people of various countries.

She published several books in German and English, and recently published the *Toxic Metals and Antidotes. Handbook of Chelation Therapy*. Her books have been translated into French, Portuguese and other languages. Some are utilized as teaching textbooks by colleges and teaching organizations. She is a regular columnist for various medical journals.

This article is an excerpt of her forthcoming book, *Evidenced-Based Chelation Therapy*; a textbook with protocols, available soon through Amazon and other booksellers.

◆

Natural Interventions For The Prostate & Urinary Incontinence:

A COMMENTARY ON THE AVAILABLE RESEARCH

by: Adrian Isaza, DC, DACBN, CCAP

Introduction

Studies have linked androgen deprivation therapy with loss of bone density and osteoporosis. In 2010, Serpa Neto, et al, conducted a systematic review and meta-analysis of 32 studies and found that patients with prostate cancer who underwent androgen depri-vation therapy had lower levels of bone mineral density and higher rates of osteoporosis andfractures compared to patients not undergoing androgen deprivation therapy.[1] Recently, in 2014, Lassemillante, et al, per-formed a meta-analysis and found that the prevalence of osteo-porosis varies between 9 and 53% for males under-going androgen deprivation therapy.[2]

According to a recent Canadian review of the diagnosis and management of osteoporosis in men, all prostate cancer patients beginning androgen deprivation therapy should be screened with DEXA scans at baseline; anyone aged ≥65 and anyone with kyphosis, back pain, substantial height loss, or other symptoms suggesting vertebral fractures should also be screened with thoracic and lumbar spine x-ray.[3]

Lycopene

In 2015, Chen, et al, carried out a systematic review and meta-analysis of 26 studies involving over 500,000 patients. This study demonstrated that higher lycopene consumption/circulating concentration is associated with a lower risk of prostate cancer.[4] In 2017, Rowles, et al, performed a systematic review and meta-analysis of 42 studies comprising over 600,000 participants. This study demonstrated that higher dietary and circulating lycopene concentrations are inversely associated with prostate cancer risk.[5]

Saw Palmetto

In 1998, Wilt, et al, published a systematic review of 18 randomized, controlled trials totaling over 2,900 men. This study suggests that S repens improves urologic symptoms and flow measures. Compared with fina-steride, S repens produces similar improvement in urin-ary tract symptoms and urinary flow and was assoc-iated with fewer adverse events.[6]

Pelvic Exercises

Pelvic exercises have also showed promising results in the treatment of urinary incontinence. In 2015, Fernandez, et al, conducted a meta-analysis of random-ized controlled trials and concluded that programs including at least three sets of 10 repetitions of muscle training daily appear to improve continence rate after radical prostatectomy.[7] In 2016, Chang, et al, conduct-ed a systematic review and meta-analysis of eleven studies and found that preoperative pelvic floor muscle exercise improves postoperative urinary incontinence after radical prostatectomy at three months.[8]

Pumpkin Seed

In 1990, Carbin, et al, designed a randomized, double-blind study of 53 patients with benign prostatic hyperplasia. This study found that urinary flow, micturi-tion time, residual urine, frequency of micturition and a subjective assessment of the effect of treatment were all significantly improved in the treatment group.[9] In 2009, Hong, et al, carried out a randomized, double-blind, placebo-controlled trial on 47 benign prostatic hyperplasia patients. This study concluded that adminis-trations of pumpkin seed oil and saw palmetto oil are clinically safe and may be effective as complementary and alternative medicine treatments for benign prostatic Hyperplasia.[10] In 2015, Vahlensieck, et al, conducted a ran-domized, partially blinded, placebo-controlled, parallel-group trial that investigated the efficacy of pumpkin seed in 1,431 men with lower urinary tract symptoms suggestive of benign prostatic hyperplasia. This study revealed that in men with benign prostatic hyperplasia, 12 months of treatment with pumpkin seed led to a clinically relevant reduction in symptom scores com-pared with placebo.[11]

In conclusion, it appears that lycopene, saw palmetto, pelvic exercises and pumpkin seed oil can be used in patients with prostate conditions who are experiencing urinary incontinence. Further studies are warranted to confirm these studies

About the author:

Adrian Isaza is both a physician and an academic. As an academic, he authored a chapter of the book "The Role of Functional Food Security in Global Health". He also teaches graduate students at Everglades

(Continued on next page)

University for the Alternative Medicine Degree program.

Adrian holds a diplomate in diagnosis awarded by the American Board of Chiropractic Internists and a diplomate in nutrition awarded by the American Clinical Board of Nutrition. Moreover, he is a Certified Chiropractic Acupuncture Practitioner and has a masters degree in medical science.

He recently obtained his PhD in medical sciences and practices medicine full-time in Tampa, Florida. Dr. Isaza has published over 30 papers advocating the use of alternative medicine.

References:

1. Serpa neto A, Tobias-machado M, Esteves MA, et al. A systematic review and meta-analysis of bone meta-bolism in prostate adenocarcinoma. BMC Urol. 2010; 10:9.
2. Lassemillante AC, Doi SA, Hooper JD, Prins JB, Wright OR. Prevalence of osteoporosis in prostate cancer survivors: a meta-analysis. Endocrine. 2014;45(3):370-81.
3. Egerdie B, Saad F. Bone health in the prostate cancer patient receiving androgen deprivation therapy: a review of present and future management options. Canadian Urological Association Journal. 2010;4(2): 129-135.
4. Chen P, Zhang W, Wang X, et al. Lycopene and Risk of Prostate Cancer: A Systematic Review and Meta-Analysis. Medicine (Baltimore). 2015;94 (33):e1260.
5. Rowles JL, Ranard KM, Smith JW, An R, Erdman JW. Increased dietary and circulating lycopene are associated with reduced prostate cancer risk: a systematic review and meta-analysis. Prostate Cancer Prostatic Dis. 2017;20(4):361-377.
6. Wilt TJ, Ishani A, Stark G, Macdonald R, Lau J, Mulrow C. Saw palmetto extracts for treatment of benign prostatic hyperplasia: a systematic review. JAMA. 1998;280(18):1604-9.
7. Fernández RA, García-hermoso A, Solera-martínez M, Correa MT, Morales AF, Martínez-vizcaíno V. Improvement of continence rate with pelvic floor muscle training post-prostatectomy: a meta-analysis of randomized controlled trials. Urol Int. 2015;94 (2):125-32.
8. Chang JI, Lam V, Patel MI. Preoperative Pelvic Floor Muscle Exercise and Postprostatectomy Incontinence: A Systematic Review and Meta-analysis. Eur Urol. 2016;69(3):460-7.
9. Carbin BE, Larsson B, Lindahl O. Treatment of benign prostatic hyperplasia with phytosterols. Br J Urol. 1990;66(6):639-41.
10. Hong H, Kim CS, Maeng S. Effects of pumpkin seed oil and saw palmetto oil in Korean men with symptomatic benign prostatic hyperplasia. Nutr Res Pract. 2009;3(4):323-7.
11. Vahlensieck W, Theurer C, Pfitzer E, Patz B, Banik N, Engelmann U. Effects of pumpkin seed in men with lower urinary tract symptoms due to benign prostatic hyperplasia in the one-year, randomized, placebo-controlled GRANU study. Urol Int. 2015; 94(3):286-95.

◆

LAURICIDIN

DABCIs and Where They Are

ALABAMA

Dr. Bradley Adams
Auburn, AL

Dr. Scott Hannen
Enterprise, AL

ALASKA

Dr. Stephanie Clay
Anchorage, AK

Dr. David Mulholland
Anchorage, AK

Dr. Jason Nardi
Juneau, AK

Dr. Stan Throckmorton
Anchorage, AK

ARIZONA

Dr. Laura Frey
Tucson, AZ

Dr. Timothy Gerhart
Glendale, AZ

Dr. Kellie Gray
Glendale, AZ

Dr. Michael Stone
Tucson, AZ

ARKANSAS

Dr. Lance Clouse
Van Buren, AR

CALIFORNIA

Dr. Michael Brunner
Glendale, CA

Dr. Leland Carroll
Studio City, CA

Dr. Christine Cohn
Newport Coast, CA

Dr. Ai Lien Diep
Los Angeles, CA

Dr. Jeffrey Greene
Los Angeles, CA

Dr. Valerie Johnson
Los Angeles, CA

Dr. Jill Jordan
Carlsbad, CA

Dr. Andrew Lucas
Riverside, CA

Dr. Kathleen Power
Pasadena, CA

Dr. Rowen Richardson
Glendora, CA

Dr. Scott Soluk
Los Angeles, CA

Dr. Sylvie Wellhausen
Loma Linda, CA

Dr. Matthew Willis
San Diego, CA

Dr. Kelly Worth
Orange, CA

COLORADO

Dr. Mary Alvrado
Denver, CO

Dr. Robert Arne
Littleton, CO

Dr. John Baer
Englewood, CO

Dr. Debra Carpenter
Pueblo West, CO

Dr. Terry Collinson
Colorado Springs, CO

Dr. Rita Cummings
Denver, CO

Dr. Paula Dechert
Denver, CO

Dr. Jan Dooley
Ft. Collins, CO

Dr. Jeffrey Gappa
Brighton, CO

Dr. Lewis Holm
Littleton, CO

Dr. Roberta Johnson
Centennial, CO

Dr. William Kleber
Berthoud, CO

Dr. Reiner Kremer
Franktown, CO

Dr. Steven Lokken
Colorado Springs, CO

Dr. Duane Lowe
Colorado Springs, CO

Dr. Brandon Lundell
Longmont, CO

Dr. David Paradiso
Colorado Springs, CO

Dr. Corrie Pillon
Denver, CO

Dr. Philip Pollock
Sterling, CO

Dr. Deborah Riekman
Colorado Springs, CO

Dr. Mark Riggs,
Englewood, CO

Dr. Kimberly Schmidt
Ft. Collins, CO

Dr. Christie Sonchar
Colorado Springs, CO

Dr. Akilah Spencer
Englewood, CO

Dr. Katie Lynn Takacs
Berthoud, CO

Dr. Thomas Turner
Boulder, CO

Dr. Michael Vanaria
Boulder, CO

Dr. Brian Wilson
Englewood, CO

Dr. Brett Wisniewski
Berthoud, CO

Dr. Kristen Woodard
Lakewood, CO

CONNECTICUT

Dr. Gina Carucci
Wethersfield, CT

Dr. Suzanne Chester
Simsbury, CT

Dr. Paul DiDomizio
Wolcott, CT

Dr. Ralph Manfredi
New Fairfield, CT

Dr. Mark Pappas
West Haven, CT

Dr. Joanne Santiago
Avon, CT

Dr. Cheryl Vincent
Simsbury, CT

FLORIDA

Dr. Theodore Bloukos
Boca Raton, FL

Dr. Anthony E. Faro III
Lake Whales, FL

Dr. John Findlay
W. Palm Beach, FL

Dr. David Frerking
Tavares, FL

Dr. Marguerite Gerger
Clearwater, FL

Dr. Harris I. Goldberg
Port St. Lucie, FL

Dr. Daniel P. Hillis
Naples, FL

Dr. Adriane Hines
Longwood, FL

Dr. Nancy Irven
Crystal River, FL

Dr. Adrian Isaza
Sarasota, FL

Dr. Kelsey Jackson
Tampa, FL

Dr. Michelle Jourdan
St. Petersburg, FL

Dr. Annemarie Leclair
Tampa, FL

Dr. Nadia Malek
Greenacres, FL

Dr. Thomas F. Mammana
Ocala, FL

Dr. Elena Morreale
Tampa, FL

Dr. Janice Piro
Palm Harbor, FL

Dr. Susan Player
Clearwater, FL

Dr. John Podlaski
Ocala, FL

Dr. Elyse Saltalamachia
Windermere, FL

Dr. Brian Scott
Ormond Beach, FL

Dr. Raymond Tolmos
Miami, FL

Dr. Ken Trussell
Brandon, FL

Dr. Keith Volstad
Jupiter, FL

Dr. Lare Ziemba
Port St. Lucie, FL

GEORGIA

Dr. Michael Anderson
Dallas, GA

Dr. Larry Haberski
Stone Mountain, GA

ILLINOIS

Dr. Jeffrey Bergin
Lindenhurst, IL

Dr. Scott Bloomberg
Newton, IL

Dr. Stephen Boudro
Elmhurst, IL

Dr. Shawn M. Breton
Arlington Heights, IL

Dr. Rhonda Button
Carmi, IL

Dr. Christine Cosgrove
Roselle, IL

Dr. Sharon DeFrain
Peotone, IL

Dr. Mete Durum
Arlington Heights, IL

Dr. Rachael Fabbi
St. Charles, IL

Dr. Raymond Ferre
Decatur, IL

Dr. Mark Fredrick
Gurnee, IL

Dr. David Hepler
Lincoln, IL

Dr. William Hogan
Lombard, IL

Dr. Lester Holze, Jr.
Elgin, IL

Dr. Cindy Howard
Orland Park, IL

Dr. Frederick Hult
McHenry, IL

Dr. Grant Iannelli
Lombard, IL

Dr. Thomas Jensen
Sterling, IL

Dr. Theodore Johnson
Chicago, IL

Dr. James McGinn, Jr.
Crystal Lake, IL

Dr. Michelle Oliver
Springfield, IL

Dr. Anthony Pantanella
Hoffman Estates, IL

Dr Marie K. Pappas
Tinley Park, IL

Dr. Brittany Parisot-Sebby
Crystal Lake, IL

Dr. Michael Poierier
Lombard, IL

Dr. Robert Pyne, Jr.
Palos Hills, IL

Dr. Delilah Renegar
Big Rock, IL

Dr. William Shelton
Lombard, IL

Dr. Douglas Stam
Bourbonnais, IL

(Continued on next page)

DABCIs and Where They Are

Dr. Cara VanWormer
Clarendon Hills, IL

Dr. Megan Winters
Macomb, IL

Dr. Chun Wong
Algonquin, IL

Dr. Steven Zaeske
Orland Park, IL

Dr. Alex Zevan, III
Bloomingdale, IL

INDIANA

Dr. John Bernzott
Connersville, IN

Dr. Thomas Jansen
Kendalville, IN

Dr. William Lyden
Mishawaka, IN

Dr. Brian McGuckin
Valparaiso, IN

Dr. Robert Prather
Indianapolis, IN

IOWA

Dr. Ramneek Bhogal
Davenport, IA

Dr. Gary Bowden
McGregor, IA

Dr. Darlene Ehlers
Tipton, IA

Dr. Robert Friedrichs
Mason City, IA

Dr. Tracy A. Stomgren
Glenwood, IA

Dr. Lynn Theesfield
Ames, IA

Dr. Zach Watkins
Johnston, IA

Dr. Anita Wubenna
Parkview, IA

KANSAS

Dr. Mark Albers
Wichita, KS

Dr. Lynn Betz
Auburn, KS

Dr. Ben Bowers
Wichita, KS

Dr. Richard Brown
Olathe, KS

Dr. Susan Buchanan-Cheney
Phillipsburg, KS

Dr. Ralph Cardin
Overland Park, KS

Dr. H.M. Chalker
Meade, KS

Dr. Dustin Cheney
Phillipsburg, KS

Dr. Rodney Clements
Eldorado, KS

Dr. Sabra Coop
Overland Park, KS

Dr. Jay Goodbinder
Overland Park, KS

Dr. Natalie Horton
Overland Park. KS

Dr. Paul Hughes
Edgerton, KS

Dr. Tobi Jeurink
Gardner, KS

Dr. Katherine Kubovy
Overland Park, KS

Dr. Christena Nicholson
Overland Park, KS

Dr. Janie Pirner
Wichita, KS

Dr. Alvin Schwerdtfager
Lindsborg, KS

Dr. Ron Young
Salina, KS

LOUISIANA

Dr. Robert W. Smith
Baton Rouge, LA

MAINE

Dr. Ronald P. Bouffard
Boothbay Harbor, ME

MARYLAND

Dr. Wayne Sodano
Bel Air, MD

MASSACHUSETTS

Dr. Nancy Bronstein
Great Barrington, MA

MICHIGAN

Dr. Daniel M. McGregor
Prudenville, MI

MINNESOTA

Dr. Jeffrey Anderson
Edina, MN

Dr. Robert Bergan
Minneapolis, MN

Dr. Timothy Bertsch
Champlin, MN

Dr. Linda Bowers
Bloomington, MN

Dr. Russell DesMarais
St. Paul, MN

Dr. Joel Eichers
Chanhassen, MN

Dr. John Gerber
Blaine, MN

Dr. Timothy Gerhart
Red Wing, MN

Dr. Jedidiah Krauss
St. Louis Park, MN

Dr. Mac Beth Lindstrom
Slayton, MN

Dr. Todd McGillick
Gaylord, MN

Dr. Thomas Miller
Coon Rapids, MN

Dr. Joseph Muldoon
Slayton, MN

Dr. Brenwyn Peddycoat
White Bear Lake, MN

Dr. Gregory Peterson
Winona, MN

Dr. Dane Roubos
Bloomington, MN

Dr. Sandra Spore
Stillwater, MN

Dr. Leslie Stewart
St. Paul, MN

Dr. Charles Strauman
St. Louis Park, MN

Dr. Terese Tomanek
Duluth, MN

Dr. Timothy Whelan
New Hope, MN

MISSOURI

Dr. Steven Baca
Ozark, MO

Dr. Vivian Carbone-Hobbs
Arnold, MO

Dr. David Clark
Oak Grove, MO

Dr. Grady Donohoe
St. Louis, MO

Dr. Charles Eckert
Raymore, MO

Dr. Seth Gerlach
St. Louis, MO

Dr. Thomas Hobbs
Arnold, MO

Dr. Scott Hollis
Blue Springs, MO

Dr. Bryce Johnston
Clarence, MO

Dr. Jay Kessinger
Rolla, MO

Dr. Robert Kessinger
Rolla, MO

Dr. Darren Kirchner
Kahoka, MO

Dr. Kelley Kirchner
Kahoka, MO

Dr. Mable Leckrone
Liberty, MO

Dr. Duane Lowe
Maplewood, MO

Dr. Terry Nelson
Kansas City, MO

Dr. Steven Perkins
Springfield, MO

Dr. James Robart
Potosi, MO

Dr. R. Vincent Satterwhite
Kansas City, MO

Dr. Jeremy Thornton
Stockton, MO

Dr. TJ Williams
St. Louis, MO

NEBRASKA

Dr. Jon J. Lozier
Omaha, NE

Dr. Christopher Murray
Hastings, NE

Dr. Mallory Rupp
Grand Island, NE

Dr. Scott Sole
Kearney, NE

Dr. Trenton Talbitzer
Kearney, NE

NEVADA

Dr. Howard Balduc
Las Vegas, NV

Dr. Craig Roles
Henderson, NV

NEW JERSEY

Dr. Jon Mastrobattista
Bernardville, NJ

Dr. Perry Ricci
Egg Harbor City, NJ

NEW MEXICO

Dr. John Dalton
Roswell, NM

Dr. John H. Gelhot
Albuquerque, NM

Dr. Shereen Jegtvig
Albuquerque, NM

Dr. Kirk Manson
Albuquerque, NM

NEW YORK

Dr. Jeffrey S. Ware
Amherst, NY

NORTH CAROLINA

Dr. William R. Armstrong
Laurenburg, NC

Dr. Phillip Arnone
Matthews, NC

Dr. Stephen Button
Mount Airy, NC

Dr. Karen Carrick
Raleigh, NC

Dr. Rick Davis
Conover, NC

Dr. Nikolas R. Hedberg
Asheville, NC

Dr. Dean Kenny
High Point, NC

Dr. Sandrine Martin
Cornelius, NC

Dr. Jacqueline McKool
Rutherfordton, NC

Dr. James Nall
Durham, NC

Dr. Kevin H. O'Briant
Wake Forest, NC

Dr. Hilary Rutledge
Wilmington, NC

Dr. Barbara Saunders
Garner, NC

(Continued on next page)

DABCIs and Where They Are

Dr. Mark Yeager
Charlotte, NC

OHIO

Dr. Robert Gilbert
Mansfield, OH

Dr. Mark McAdoo
Athens, OH

Dr. Van Merkle
Dayton, OH

OKLAHOMA

Dr. Rebecca Burton
Atoka, OK

Dr. Melena Keeth
Oklahoma City, OK

Dr. Gerry Langston
Tulsa, OK

Dr. Mark Mercer
Mannford, OK

Dr. Colleen Robinson
Duncan, OK

Dr. Richard Santelli
Bethany, OK

Dr. Michael Taylor
Tulsa, OK

OREGON

Dr. Daniel Beeson
Portland, OR

Dr. David Braman
Tuelatin, OR

Dr. Kathleen M. Galligan
Oregon City, OR

Dr. Edward M. Geller
Medford, OR

Dr. Usha Honeyman
Corvallis, OR
Dr. Steven Lumsden
Gresham, OR

Dr. Kenzie Maloy
Hermiston, OR

Dr. Scott Northrup
Brookings, OR

Dr. Kristopher Peterson
Hermiston, OR

Dr. Thomas Richards
Beaverton, OR

Dr. James Siegel
Canyonville, OR

Dr. Mark Thomas
Cottage Grove, OR

Dr. Uma Mulnick
Portland, OR

PENNSYLVANIA

Dr. Shaun T. Adams
Chambersburg, PA

Dr. Bruce Fink
Coudersport, PA

Dr. Mark Homison
Cranberry Township, PA

Dr. Karen L. Jorgensen
Pittsburgh, PA

Dr. John LaHoda
Richboro, PA

Dr. Fredrick Osterberg
Red Lion, PA

RHODE ISLAND

Dr. Jennifer Welch
Westerly, RI

SOUTH CAROLINA

Dr. Jon Bergrin
Florence, SC

Dr. Benjamin L. Bradshaw
Sumter, SC

Dr. Bruce Gwinnup
Charleston, SC

Dr. Peter Kfoury
Charleston, SC

Dr. Morgan Kutzner
Greenville, SC

Dr. Robert Pascal
Charleston, SC

Dr. Virginia Samuel
Columbia, SC

Dr. Justin L. Snider
Laurens, SC

SOUTH DAKOTA

Dr. Roger Bommersbach
Brookings, SD

Dr. Eric J. Kuyper
Rapid City, SD

Dr. Robert Kuyper
Rapid City, SD

Dr. Roger Prill
Mitchell, SD
Dr. David Schwierert
Rapid City, SD

TENNESSEE

Dr. William Strauss
Lebanon, TN

TEXAS

Dr. Ralph Burton
Kennedale, TX

Dr. Lance Carlton-Durrett
The Woodlands, TX

Dr. Victor Carsrud
Austin, TX

Dr. Steve Grimm
San Antonio, TX

Dr. Doreen Lewis-Overton
San Antonio, TX

Dr. Joe Lindley
Houston, TX

Dr. Tim McCullough
Houston, TX

Dr. Zachery McVey
League City, TX

Dr. Gregory Mrozinski
Houston, TX

Dr. Mike Prioux
Friendswood, TX

Dr. Benjamin Storey
San Angelo, TX

Dr. V.M. Thompson
Arlington, TX

UTAH

Dr. Richard Allen
Sandy, UT

Dr. Don Vradenburg
St. George, UT

VIRGINIA

Dr. Robert Duca
Dunn Loring, VA

Dr. Guntrang Khalsa
Herndon, VA

WASHINGTON

Dr. H. Earl Moore
Spokane, WA

WISCONSIN

Dr. Michael Berglund
Kenosha, WI

Dr. Leslie Best
Madison, WI

Dr. Barbara Bradley
Wausau, WI

Dr. Kevin Branham
Eagle River, WI

Dr. Bernie Finch
Pepin, WI

Dr. Gwendolyn Gauerke
Iola, WI

Dr. Craig Gilbaugh
Ashland, WI

Dr. Kathleen Maedke
Milwaukee, WI

Dr. Cheryl Metzler
Green Bay, WI

Dr. Gina R. Schultz
Blanchardville, WI

Dr. David A. Sommerfield
Rice Lake, WI

Dr. Dean Willhite
Manitowoc, WI

Dr. Kelly Von-Shilling Worth
Milwaukee, WI

Dr. Scott Vander Wielen
Menasha, WI

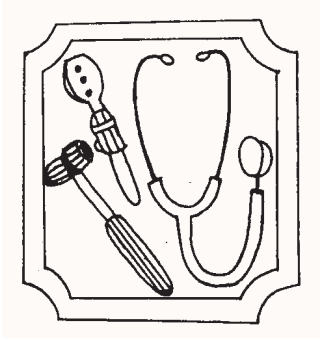
WYOMING

Dr. Rita McConnell
Gillette, WY

◆

Professional Coop

CLINT PUBLICATIONS
720 OAK KNOLL
ROLLA, MO 65401



STAY INFORMED

ON THE LATEST IN

NATURAL HEALTH CARE

Subscribe to *The Original Internist* for only $50 annually

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____ E-mail _____

☐ Check enclosed ☐ Bill my Visa/Master Card ☐ Bill my American Express

Credit Card Number _____ Exp Date _____ CVD _____

Please return to Clint Publications, 720 Oak Knoll, Rolla, MO 65401 or call (573) 341-8448