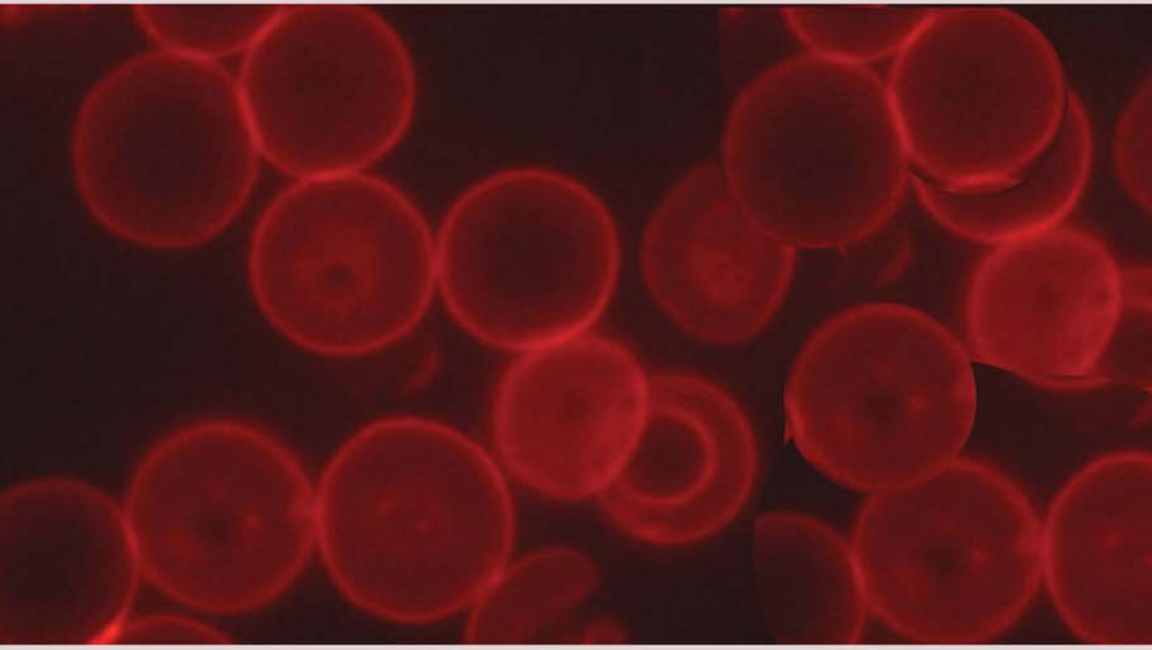
Ted Aloisio



Blood Never Lies

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A Practical Guide To Health And Nutrition

Ted Aloisio, BA CNM

Llumina Press

DISCLAIMER

The information herein is not intended to replace the services of a trained health professional. The concepts that are presented are non-medical in nature. You are advised to consult with your health care professional with regards to matters relating to your health.

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Dedication

To my lovely wife Anna. The angels were smiling on me that day in 1980 when we first met and they have been smiling on me ever since.

Acknowledgements

To my family, my wife Anna, my four daughters and my son; putting up with me during this time of great focus was immeasurable.

To John and Janet Marvin, mentors and friends. Their belief in me in the beginning made everything possible.

To Nicole Bonnin, who was the first to introduce me as a future author. I liked how it sounded and after that, I had no choice but to write the book.

To Mr. Steve Denk, a man whose wisdom is only paralleled by his compassion. I owe him so much.

To Mr. Bob Proctor, a mentor and a friend. His teachings, especially about the concept of the "Razor's Edge" compelled me to pick up my manuscript from the floor, where I had thrown it countless times, and continue writing.

To the players, coaches and staff of the St. John's Maple Leafs hockey team of the American Hockey League, and Maple Leaf Sports and Entertainment Ltd., owners of the National Hockey League's Toronto Maple Leafs for granting permission to do nutritional work with the players.

To Dr. X. (who asked not to be identified for fear of professional reprisal) — you were my guide through the complex world of allopathic medicine and your insights were indispensable.

To my editor, Sharon Crawford. Her skill and dedication helped make my words sparkle.

To my clients who have let me "poke fingers" in their clinics, health clubs, spas, gyms, offices and homes.

Most importantly to the 10,000 or so people whose fingers I poked. Without you none of this would have been possible. On many occasions I was learning more from you than you were from me.

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Introduction

As the saying goes, I've had a book in me for sometime. I resisted writing this book for two reasons. First, I knew the task would be monumental, and probably the most difficult undertaking of my life. Second, and more importantly, I did not want the book to turn into just another person's opinions about health issues.

Over the last few years, I have personally performed over 10,000 live cell blood nutritional assessments. People from all walks of life have "let me poke their finger." Afterwards we spent from 30 minutes to several hours discussing what we saw on the screen as well as general nutrition and health. I have assessed the blood of the young, the old, the motivated, the dragged-in-kicking-and-screaming, the athletic, the sedentary, the sick, the healthy, the open-minded, the sceptical, and the close-minded. In many instances, I learned more from them than they learned from me. As a scientist, I am aware that the results and observations culled from over 10,000 sessions are statistically significant. As a nutritional professional, I have validated many principles taught to me and a few I suspected.

In this book I will share with you some startling conclusions. Many of my insights may be totally contrary to those rendered by your health care provider. I toyed with the idea of calling this book "No Matter What Anyone Says, The World Is Round." Up until 500 years ago, almost everyone would have told you that the world was flat. If you rely solely on your sense of sight, the world *is* flat. Everyone believing that the world was flat did not make it any less round. One brave man was stoned for promoting the concept that the world was round. I hope I don't meet with a similar fate.

I don't ask you to accept anything I write. I don't ask you to accept anything at face value. I certainly don't. I encourage you to ask questions. If the answers make sense to you, great. If the answers do not resonate, make your own choice. I am not trying to convince anyone of anything. I am sharing knowledge and information. I never ask others

to accept my words with blind faith in any of my sessions, in my counselling or in my writing. I have no way of knowing what is in your best interest; that is for you to figure out.

I only have one wish for everyone I meet and for everyone who reads this book. Whatever you do, do it with awareness, not blind faith. I don't want you to give your power away to anyone.

PART I

THE BASICS

Chapter 1

What Is Microscopy

If you are interested in health you will be hearing a great deal about microscopy in the future. Although it is referred to by many names, the basic technology is the same. Some of the most common names include live cell microscopy, blood cell microscopy, phase contrast microscopy, darkfield microscopy, wet-mount microscopy and nutritional microscopy. These names and many others refer to the same basic method of assessing. For simplicity I will use the term *nutritional microscopy, live cell microscopy* or simply *microscopy.*

Nutritional microscopy is more of a process than a procedure. *Microscopy* means employing a microscope for investigation and assessment, *nutritional* is self-explanatory. It would be a mistake however, to assume that nutritional microscopy is simply using a microscope to scientifically determine nutritional deficiencies. Microscopy involves more than that.

A nutritional microscopy session appears quite straightforward in nature. A drop of blood is painlessly extracted from the client's body usually from the finger. The finger is not squeezed to assure that the sample is not damaged. The capillary blood is allowed to come out on its own and then immediately placed between two pieces of pre-cleaned glass. The blood begins to slowly dry out however it is protected from oxygen by the glass long enough to allow the assessment to be completed. Technically, this is known as a wet-mount examination or a peripheral blood smear.

At this point the sample is placed on the stage of a very specialized microscope. Most microscopes have one function and that quite simply

is making small things big. The type of microscope used by a microscopist has been adapted with special condensers and objectives, which allows the blood to be viewed in a special way. The light does not pass through the specimen but around it. The combination of special viewing apparatus coupled with the fact that no fixatives or stains are used, reveals many components of the blood that would be hidden from conventional blood analysis.

Up until this point we have seen some interesting differences between conventional blood analysis and nutritional microscopy. As we continue there are even more striking differences. This type of microscope is almost without exception connected by colour camera to a monitor. One drop of blood is its own universe. Stated another way, the drop of blood we are viewing is a holographic image of the rest of the blood as well as the body as a whole. As such, there is a myriad of entities to be viewed. The microscopist and the client will view that blood together for 30 minutes to an hour. The client can ask questions and is truly part of the procedure.

Thus far I have explained the technical aspect of the procedure. The skilled microscopist is well versed in the dynamics of blood, the correct amounts and condition of cells and numerous other factors. In other words, he or she knows what should be there, what its condition should be, and what shouldn't be there. The art of microscopy is far less tangible. The microscopist must use the technical knowledge he or she has acquired, couple it with the profile, wishes and needs of the client and create a direction of health. The analogy I use with my clients is that I create the roadmap (live cell microscopy and nutritional assessment), they purchase the vehicle somewhere else (supplements, food, water etc.), and as long as they actually want to make the trip, they will arrive at their destination (good health).

Despite all of its advantages over conventional blood testing, nutritional microscopy is not a diagnostic tool. Neither is the microscopist a doctor, he or she is usually not a medical person. More and more doctors now use nutritional microscopy but not as a diagnostic tool. Doctors have far superior methods for diagnosing disease at their disposal. We can realize the superiority of assessing blood while it is still live if we understand how conventional blood testing works. The nurse draws several vials of blood and places them in a specialized container. Because the blood will not be analysed immediately, a preservative such as EDTA (the same stuff they put in mayonnaise) is usually em-

ployed to reduce decay. The blood goes to a lab and gets analysed at a later date. The blood is stained and a chemical fixative is applied. The lab technician then proceeds to analyse the "dead" blood. This procedure is the equivalent of a post mortem (autopsy). Many components can be analysed but many more are lost. Just as a live patient can tell you more than a dead one, so it is for blood. After the blood analysis, the technician sends your doctor a number of sheets containing abstracted numbers, values and terms.

Lab technicians have argued (erroneously) that conventional blood analysis is technically far superior to live cell assessments. This is through no fault of their own as they have not received training on nutritional microscopy technology and most lab technicians have no familiarity with it. Even if we charitably concede technical superiority to the proponents of traditional blood testing, artistic aspects in nutritional microscopy oversteps conventional blood testing.

The art of microscopy pertains to the interaction between client and microscopist. The client will view the actual state of his or her own blood. The blood itself will show conditions within the body as a whole. The effects of nutritional deficiencies will show up not only pertaining to the bloodstream but how they affect the body as a whole. The microscopist will use the visual presentation to educate the client about the complexities of the human body and the ultimate influence we have over our own health. Simply showing these imbalances to the client may help the client understand how deficiencies have led to health challenges.

At this point the educational component of the artistic aspect fully comes into play. If the microscopist merely cites an imbalance and makes overall health recommendations to the client, he or she falls into the allopathic medical trap. The standard procedure of an allopathic (drug-based) health care professional is examine, assess and prescribe. The client learns nothing from this model. He or she might feel better, but without the accompanying education, the treatment (many of which only mask the problem or problems) will probably lead to further complications. In the long run, this is a disservice.

A client should leave a nutritional microscopy session far more enlightened. The client will see many red blood cells, white blood cells, creepy crawly organisms and a myriad of microorganisms never before imagined as residing within the body. The client might see a white blood cell only 12 microns in diameter fill an entire computer screen

and gobble waste like a vacuum cleaner. We can see this occurrence because the blood is still alive. This alone dispels the myth that traditional blood testing is technically superior. This sight can have quite an impact on the client. I have spoken in front of large groups and chosen one person from the audience to volunteer to have their blood assessment done for the whole room. On many occasions I have made quite a big impression on an entire room full of people with one blood sample.

The visual impact is indeed impressive. When coupled with information and education it becomes astonishing. The visual impact motivates the elimination of bad habits, and the introduction of good habits. Upon reassessment, if the client sees noticeable changes, the client's notion that they are in control of their own health is further reinforced.

There you have in a nutshell exactly what nutritional microscopy is. This basic description will be further enhanced throughout the next chapters. The main dynamics of nutritional microscopy furnish participants with a real opportunity to benefit from the procedure. One question that I am asked on a continual basis is, "This technology is so amazing, why don't regular doctors use it?" Some have argued that doctors do not use microscopy because they are unfamiliar with the nutritional aspects of health. Others have argued that the equipment is too expensive. Others have cynically argued that the accuracy and preventative power of microscopy would cost the health care business too much profits. However, the real reason that doctors and other traditional health care providers use this technology sparingly has its roots in a great debate which began more than a century ago.

Chapter 2

The Great Debate

I read a lot of books. Many of these books included a history of the subject. Almost invariably I skip that chapter. Sometimes I speed read the section and if I deem it germane to my understanding of the subject I read it in its entirety. If you wish you can certainly skip this chapter, however, I strongly recommend that you read it. Not only do I think it important to understanding this subject, I think it is essential. A complete understanding of nutritional microscopy will give you an incredible insight into health, disease and our current health care woes. A grand promise perhaps, but please read on.

The history of nutritional microscopy began innocently enough with the invention of the microscope in the 16th century. In 1595, the very first microscope was produced. It was nothing more than a powerful magnifying lense. Many notable scientists of the era used this new invention that magnified objects 20 or 30 times their normal size.

In 1632, a man by the name of Anton Van Leeuwenhoek was born. Van Leeuwenhoek was an unlikely scientist. He did not receive higher education, had no wealth, and dwelled outside the scientific elite of the day. Yet this man revolutionized microscopy. His skill at grinding glass and his naturally acute eyesight enabled him to build a microscope that could magnify over 200 times with amazing clarity.

In his lifetime Van Leeuwenhoek built over 500 microscopes. His observations, rather than his device, distinguished him in the annals of microscopy history. He was the first to discover bacteria, blood cells, sperm cells and much more. His most notable experiment caused quite

a stir among the scientific "who's who" of the day. He collected some stagnant water and analysed it with his microscope. He noticed a bevy of little creatures in this water. His naturally inquisitive mind led to an incredible discovery. He collected clean rainwater and sealed it in sterilized pipettes. At first, his analysis revealed nothing. Day after day he looked at the sample and saw nothing. On day four, a startling transformation occurred. The same creatures that were observed in the stagnant water had somehow made their way into this sealed container.

Van Leeuwenhoek was the first person to ever see a phenomenon known as *spontaneous generation*. His naturally inquisitive mind wanted to ascertain how procreation could happen without a mommy and daddy germ. He had sealed the pipette, keeping the water sterile and yet four days later life emerged. He shared his observations with notable scientists of the time including Robert Hooke, Robert Boyle and Sir Isaac Newton. They summarily dismissed his observations, not on scientific merit, but rather because they were not in keeping with the religious dogma of the day. To create life, the powerful church of the day dictated, there must be a mommy and a daddy. Scientists dismissed Van Leeuwenhoek's work not on merit, but because it did not keep with the popular belief (How dare you say the world is round!).

You can actually recreate this experiment yourself. Dr. Kurt Donsbach calls this experiment "making protozoa." Mix hay and sterilized water in a sealed, sterilized tube. At this point, if you scrape the hay you will see nothing. Do the same scraping a few days later and you will see several life forms. The key question is *where did these germs come from?* Sealed and sterilized and yet germs appear. Because the answer could not be reconciled with church dogma, the question was not answered then, or more startling, since. If you don't believe me, pick up any conventional microbiology textbook and see if you can find this question answered or even acknowledged. It is conveniently omitted.

Scientists could dismiss Van Leeuwenhoek's findings, but couldn't ignore one facet of his work. He had discovered a microscopic world - a world that could be studied, analysed, and documented. He had laid the groundwork for the development of the germ theory. In the 19th century, noted microbiologist Louis Pasteur was intrigued with this microscopic world and developed the germ theory.

The germ theory hypothesizes that all infections and contagious disorders (diseases) are caused by germs. This theory erroneously presupposes that the blood is sterile until invaded. This piece of nonsense

is still promoted by modern-day bacteriologists. One look at live blood dispels this fallacy. Each disease has its own germ, the germ theory asserts. If the malaria germ invades you, then you contract malaria. If the cancer germ invades you, then you get cancer and so on. If you have any hope of curing the patient, this theory dictates that you must kill the germ. Modern medicine is based on the germ theory. All the tools of modern medicine – drugs, surgery, chemotherapy, radiation and so on – are all designed to kill the germ before the germ kills you. Problem is the germ theory is flawed and even Pasteur recanted it on his deathbed.

How can modern medicine be based on a lie? To fully understand the answer to this question we must first study the works of another microbiologist of the era. His name was Antoine Béchamps and he was a brilliant man. He did not have the resources, connections or flamboyance of Louis Pasteur but he was every bit as competent a microbiologist. In fact, some have argued that Béchamps was the most erudite scientist of his time. Béchamps challenged Pasteur's theory by putting forth one of his own. The *pleomorphic theory,* as Béchamps called it, had one very distinct advantage over its counterpart. Pleomorphic theory is based on the correct premise that blood is not sterile. Béchamps discovered microbes in the blood. He named these microbes *microzymas.* If an individual became sick, these microbes would alter their state. Although Pasteur expressed the firm belief that the blood was sterile in healthy people, microzymas existed in healthy people.

Béchamps believed that disease came from within the body. The environment or terrain of the body, not the germ itself, dictated whether or not we got sick. The logic is irrefutable. Many people smoke; they don't all get lung cancer. The Norwalk virus made its rounds on the cruise ship and only some of the passengers contract it. Almost everyone drank the water in Walkerton, Ontario during a bacteria outbreak in May 2000 and only 7 people die. Health authorities are continually warning older people and people with weakened immune systems to take extra precautions.

Pasteur however had other ideas. He used his power, influence, money and flamboyance to promote his theory and discredit the pleomorphic theory. The germ theory became the accepted theory. This is despite the fact that some forty years later Pasteur himself recanted with the words, "the microbe is nothing; the terrain is everything." It was too late. Although he recanted, allopathic medicine has been entrenched ever since.

Nutritional microscopy and many of the alternative or complementary modalities of health are based partially or completely on pleomorphic theory. Yet many alternative practitioners have never heard of Béchamps or his work. Acupuncture, which predates Béchamps by thousands of years, is completely based on pleomorphic tenets. Consciously or unconsciously, all alternative practitioners employ pleomorphic theory as their basis for healing. Any time you hear of a practitioner treating the whole body (holistic medicine) as opposed to treating by symptom, the practitioner employs the pleomorphic theory. Change the environment or terrain of the patient and the patient will be healed.

I consider German microbiologist and physician Guenter Enderlein as the father of nutritional microscopy. He was Antoine Béchamps' student and his mentor taught him well. Enderlein studied live blood for over 40 years and wrote over 300 articles. In 1925, he published a book entitled *Bacteria Cyclogeny*. Enderlein dedicated his life to confirming that Béchamps was indeed correct. Enderlein's basic theory is that all microorganisms are one big family. They live in the air and they live in our bodies. If our internal environment or terrain is balanced (nutritionally, PH, etc.), then these microorganisms will remain in a non-pathogenetic (non disease-causing) state. If the body is imbalanced, these opportunistic microorganisms will change form and become pathogenetic. This echoes Pasteur's deathbed assertion, "the microbe is nothing; the terrain is everything."

Although not widely accepted in mainstream medicine, since the 1960s pleomorphic theory has made some inroads. Many reputable scientists have acknowledged the essentials of pleomorphism. However, scientists still dispute whether the microbe or the terrain is the primary importance in the determining of illness. Wholeheartedly accepting Béchamps and Enderlein's theories would have a substantial effect on the drug industry, the food industry, the medical establishment and the reputation of many biochemists. If anyone can find one biochemist that can disprove Béchamps and Enderlein's theories, I would be glad to listen. I have validated and verified the work of these two brilliant men with each of the 10,000 plus nutritional microscopy sessions I have performed.

Allopathic medicine is based on monomorphism or the germ theory. Disease is an invasion by an outside force, injury, metabolic defect or invading organism. To save the patient, the battle cry has become,

"kill the germ, burn the germ, cut the germ out." The alternative or complementary healing approach is based on pleomorphic theory. Create an environment of balance in the body and any invading microorganism does not stand a chance. Because the germ theory has served as the basis for traditional medicine for over a century, a simple examination of four basic diseases should give us a scorecard on the actual effectiveness of the germ theory in combating disease.

Chapter 3

Is our Current System Working?

Although the pleomorphic theory is the correct theory of disease, it seems that the germ theory won the great debate. Certainly it won the battle, but many of us are making sure that it does not win the war. Because the medical mainstream (and some in the alternatives) has unequivocally embraced the germ theory, let this chapter be a scorecard on how well the germ theory handles disease.

I choose my sources well. I have taken my facts and statistics from the most credibly sources available. I want the information in this chapter to be irrefutable fact. You can choose to disbelieve it, but your disbelief will not change the reality (The world will still be round!). The majority of the statistics presented have been collected by the Centers for Disease Control and Prevention in Atlanta, Georgia. With over 8,500 employees, the CDC has the resources and manpower to accurately collect data about disease and related issues.

Cancer

Over 30 years ago, then president of the United States, Richard M. Nixon declared war on cancer. He proclaimed it would be cured in his lifetime and appointed Benno C. Schmidt as cancer czar. Despite having a czar and billions and billions of dollars to spend (in fact, the United States federal government alone has spent over $35 billion since 1971) on the problem the result, since Nixon's declaration, has been zero total progress on cancer. In fact, total mortality rates in the United

States have actually increased by eight per cent. Dr. Samuel Epstein, University of Chicago Medical Center, was recently interviewed on CNN and when asked whether we were losing the war on cancer replied, "Oh, I think we've really lost the fight against cancer. There have been major increases in cancer rates over the last four decades."

The statistics are frightening. In the United States alone 1,500 people per *day* die from cancer. In 1996, the World Health Organization estimated that 10 million new cases of cancer would occur in the world each year. Mishio Kushi, the Nobel Prize winning physician and founder of the Kushi Institute has stated that the lifetime risk of cancer is 50 per cent. That means we will all be affected; either we get the disease or we become a caregiver for someone who contracts it.

Cancer ushered in the 1900s as the 8th leading cause of death in North America. It closed out the century as the second leading cause of death. A medical system based on the germ theory uses the standard approach of "kill the germ, kill the microbe, kill the tumour." Radical surgery, toxic drugs and radiation are all used to kill the cancer. The chemotherapy drugs are so toxic that the *Los Angeles Times* reported on September 13, 1983 that the American Cancer Society states that the increased risk "should be of great concern to those handling anticancer agents." Those handling them? What about those consuming them? What about those getting them shoved into their veins?

Dr. M. Ghoneum is quite an expert on the subject. Dr. Ghoneum earned his PhD. at the University of Tokyo, Japan, in radioimmunology, and did his post-doctoral work at the University of California, Los Angeles, School of Medicine, in cellular and molecular immunology. Dr. Ghoneum is considered a leading expert in the emerging field of cancer immune therapy. He states, "We have seen that it is difficult for (conventional medicine) to achieve a 100 per cent kill rate without killing the patient in the process. At best, we can hope to kill 95-98 per cent of the cancer cells with these therapies. At this point a patient may be considered to be in remission. Therapy is discontinued and the patient closely monitored. However, as most oncologists are painfully aware, these remissions are frequently short-lived." This is quite a shocking quotation from a member of the traditional medical establishment. Is he insinuating that if we do not change the environment that breeds cancer then the cancer will return?

The search for the cure for cancer has been the search for one magic bullet after another. In the late 1930s and early 1940s when penicillin

and sulfa drugs were discovered the magic bullet for cancer was a wonder drug. Keep funding the research and some chemist somewhere would certainly discover the wonder drug that would cure cancer. Now that more than half a century has passed and no wonder drugs have appeared on the horizon, the new magic bullet is the human genome. Now the medical mantra is keep funding the research and we will discover a genetically modified protein that will cure cancer. I hope no one is buying this. Cancer is not a localized disturbance. You do not contract cancer of the elbow, toe or ear. When you receive a diagnosis of cancer, you have cancer of the whole body. How many people have had cancerous parts removed and still succumb to the disease? The cancer may have manifested in the elbow, but if all you do is remove the elbow without changing the environment, then the cancer will manifest elsewhere.

Cancer is a holistic reaction to an environment that is conducive to it. The germ theory seems to have failed us in the fight against cancer. To make matters worse, cancer also has an ally. That ally is the profitability of cancer. Cancer is big business. The American Cancer Society has the resources and budget of a major corporation. The ACS spends $1 million per day. If you ever visit the head office of the ACS you will notice an elegant placard that states something to the effect that it will close its doors when cancer is cured. The ACS is a major corporation with upper echelon management earning large salaries and other perks, so how many of them want the doors closed anytime soon? Regrettably, the situation in Canada is no better. Cancer can be beaten is the slogan used by many cancer agencies. I have personally seen enough evidence and emphatically believe this. The problem is that the big cancer machine juggernaut is a far more formidable foe. If you truly believe that we are making progress in the war on cancer I would like you to ponder these words as reported in the *London Daily News,* "A man of middle age would have difficulty in numbering the cures for cancer which have appeared and disappeared in his lifetime. Millions of animals have been tortured throughout the world to find the cure of a malady which has been steadily increasing for 50 years. Flare headlines in the daily newspapers once more announce, or at least suggest, that we are on the eve of the most sensational medical discovery of the age." This was written on February 1, *1924.* Almost 80 years has passed and we're still hearing the same load of malarkey.

Heart Disease and Stroke

Heart disease and stroke (cardiovascular disease or CVD) kills more people in North America than any other cause. According to the CDC, 725,192 people died in 1999 of heart disease and stroke in the United States alone. In 1997, 15 million new cases of CVD were diagnosed. Currently, one in four North Americans suffers some form of CVD. These statistics include:

- 50 million with high blood pressure
- 12 million with coronary heart disease
- 6.2 million with angina pectoris
- 4.4 million that have had a stroke
- 1.8 million with rheumatic heart disease
- 1 million with congenital cardiovascular defects
- 4.6 million with congestive heart failure

Since 1900, CVD has been the leading case of death in every year but one (1918). The aforementioned statistics should be both appalling and disturbing. After you have finished this book, I suggest you re-read these statistics. I guarantee you that you will be twice as appalled and twice as astonished.

The medical community has laid much of the blame for CVD on cholesterol. The germ theory battle cry has manifested as "kill the germ, kill the microbe, kill the cholesterol." So current mainstream treatments for CVD include angioplasty, which inflates an already weakened artery or arteries, drugs and coronary by-pass surgery. In 1998, 67,889,000 prescriptions were filled in the United States alone for cholesterol lowering drugs. At an astonishing cost of $4.596 Billion, these drugs are the number one selling class of drugs in North American and sales are booming.

Although we spend all this money fighting cholesterol, it is not the evil monster as purported. Cholesterol is an essential nutrient as essential to life as food and water. Because essential means you would die without it, how has cholesterol been so vilified? Cholesterol does not cause CVD. To my knowledge no medical study has ever conclusively confirmed that cholesterol causes CVD. Having high levels of blood or serum cholesterol (especially the LDL, the so-called bad cholesterol) indicates that something is amiss. Some of the imbalances that could cause this problem include: thyroid issues, dehydration, liver issues,

low minerals and low B-group vitamins. High cholesterol is not caused by a deficiency of cholesterol medication (the so-called statins). The answer is not to consume a toxic drug and chemically impair the liver's ability to produce cholesterol. Perhaps we should concentrate on why the cholesterol is high and fix that problem. I am not advocating that anyone prescribed cholesterol medication stop taking it. Prescription drugs are a dangerous substance – one look at the laundry list of side effects the druggist gives you when you get most prescriptions filled testifies to that. Your doctor should carefully control your drugs and the dosage. Always consult with your doctor when you want to stop poisoning your body with unnecessary medication.

Much attention has focused lately on the connection between homocysteine levels and CVD. In the late 1960s, a pathologist named Kilmer McCully made an interesting discovery. While on staff at Harvard Medical School, McCully observed that two children had died of a disease called homocystinuria, the autopsies revealed severe arteriosclerosis or hardening of the arteries. Because homocystinuria is associated with elevated levels of homocysteine, and hardening of the arteries rarely happens in children, McCully concluded that high levels of this amino acid could be responsible. This was such a radical departure from the cholesterol theory that Harvard gave McCully his walking papers.

In 1997, almost 30 years later, the *New England Journal of Medicine* confirmed that high levels of homocysteine do indeed increase the risk of CVD. If McCully was right all those years ago, why did Harvard unceremoniously banish him? Cholesterol lowering drugs control cholesterol. Adequate consumption of three B group vitamins; B6, B12 and folic acid controls homocysteine. In the fight against CVD, Pan American Laboratories recently began producing a breakthrough "drug" called FOLTX®. This "drug" does indeed lower homocysteine levels and costs approximately $38 U.S. for a month's supply. Would anyone care to guess what the components of this "drug" are? B6, B12, and folic acid are the only components. Kilmer McCully is vindicated, albeit 30 years too late. How many people have died from high homocysteine levels who could have been saved if we had listened to McCully 30 years ago?

The germ theory's battle cry of "kill the germ, kill the microbe, kill the cholesterol" has not served us well in the battle over CVD. On May 4, 2002 the noted scientist, Dr. Mathias Rath, addressed Stanford University in Palo Alto, California. On that date, Rath made an historic

speech. He declared, unequivocally, that heart conditions and stroke were not diseases at all. His extensive research indicates that all CVD is a result of vitamin, mineral and essential nutrient deficiency over several years. According to Dr. Rath, a well-respected member of the conventional medical elite, more than one million North Americans will die this year from an easily correctable deficiency. From my own experience, 8 out of 10 people are nutrient deficient. I validate Dr. Rath's findings and I believe he validates mine.

Diabetes

Of the four major diseases that are discussed in this chapter, diabetes is by far the most hideous. Heart disease certainly claims more lives; however, the increase in rate of new diabetes cases is numbing. Diabetes mellitus is a group of diseases characterized by high levels of glucose due to defects in insulin production, insulin action or both. Many complications including early death are associated with diabetes.

There are two main types of diabetes. Type I diabetes was formerly known as insulin-dependent or juvenile diabetes. Type II diabetes was formerly known as non-insulin-dependent or adult-onset diabetes. Type I diabetes occurs when the body's immune system destroys pancreatic beta cells. Beta cells are the only cells in the human body that can produce the hormone insulin. Type I diabetics need insulin injections or insulin pumps to survive. Type I accounts for only 5 to 10 per cent of all diabetes cases.

Type II diabetes is quite different. Type II diabetes is not so much a *lack* of insulin as a condition of *ineffective* insulin. In Canada and the United States approximately 20 million people have diabetes. This figure represents approximately 6.5 per cent of the population. Over one million new cases are diagnosed every year. In 1999, in the United States alone 450,000 people died from the complications of diabetes making it the sixth leading case of death.

The risks of diabetes have more to do with the complications than with the disease itself. Diabetics have two to four times more heart disease that the general population. Diabetics have two to four times the risk of stroke. The rate of kidney disease, blindness and nervous disorders runs much higher in diabetics. The number one cause of amputations in North America is diabetes.

Because diabetes is considered a chronic condition instead of a terminal condition, the suffering is greater and over a much longer period

of time. Medical costs associated with diabetes are much higher than terminal diseases. In 1997, The American Diabetes Association commissioned a study that calculated medical cost of diabetes in the United States alone at an astonishing $98 Billion per year. The germ theory has truly failed here. Although almost $100 Billion is spent per year, there is absolutely no progress being made. Amputations are up; diagnosis in children under 12 is way up (one of the reasons Type II is no longer called adult-onset); blindness rates are up, and suffering is way up. Clearly we need a better plan than "kill the germ, kill the microbe, kill the excess blood sugar."

Arthritis

Arthritis is a disease of immense proportions. Because arthritis has been around for so many centuries we perceive it as a natural part of growing old. Most people are not aware of how complex a condition arthritis really is. Over 27 different types of arthritis exist and that excludes other related conditions such as fibromyalgia and scleroderma. Some medical texts have reported over 100 causes for arthritis.

Arthritis affects over 50 million people in Canada and the United States thus making it the most prevalent disease. Arthritis in some form afflicts one in six people. As the baby boomers age, conservative estimates indicate that over 70 million people will be afflicted by the year 2020. Although we have already seen that many different types of arthritis exist, the two main forms are rheumatoid and osteoarthritis. Rheumatoid arthritis, or RA, involves inflammation of the lining of the joints and/or internal organs. It is a systemic disease that affects the entire body. RA is characterized by inflammation of the membrane lining the joint; this inflammation results in pain, stiffness, warmth, redness and swelling. The inflamed joint lining, the synouium, can invade and damage bone and cartilage. The involved joint can lose its shape and alignment, resulting in pain and loss of movement. RA is considered an autoimmune disorder, that is, the body's own immune system does not operate as it should, and attacks joint tissue causing damage.

The most common form of arthritis is osteoarthritis, or OA. OA is a degenerative joint disease characterized by the breakdown of the joint's cartilage. Cartilage is the part of the joint that cushions the end of the bone. When cartilage breaks down, bone begins to rub against bone, reducing mobility and causing pain.

Regardless of the form of arthritis analysed, the germ theory has failed miserably. The germ theory's battle cry here has manifested as "kill the germ, kill the microbe, kill the pain." The medical model for arthritis is control the pain as long as possible and then perform surgery. Using this approach, sacrifices are made in every instance. The sacrifice might be in the form of speedy degeneration of the effected area or it might be in other forms such as the side effects associated with drugs and surgery. Let's examine some of the most popular medical approaches to arthritis.

Acetaminophen

Acetaminophen, or Tylenol® as it is commonly referred to, is one of the most commonly used pain relievers for arthritis. Because it is an over-the-counter remedy, acetaminophen gives people the false sense that it is benign and without side effects. Nothing is further from the truth. Acetaminophen has been associated with severe liver toxicity and liver failure has also been linked to this *harmless* remedy. It certainly does relieve pain, which is why it is the fastest growing pain reliever in North America. Acetaminophen may relieve the pain but it does not cure arthritis and it certainly does not assist in the healing.

Ibuprofen

Another over-the-counter pain reliever that is quite popular is ibuprofen, Advil® being one the most common brand names. This medication does indeed relieve the pain and acts as an anti-inflammatory; but it also does not assist in the healing. The relief one receives comes with a heavy price tag. Common side effects include dyspepsia, indigestion, vomiting, gastrointestinal hemorrhage and perforation, peptic ulcers and diarrhea. Ibuprofen is part of a group of drugs known as nonsteroidal anti inflammatory drugs or NSAIDs. NSAIDs are drugs that block the body's inflammation response without the use of steroids.

Prescription NSAIDs

One of the newer NSAIDs that does require a prescription is Vioxx®. Although Vioxx® is classified as an NSAID, it is considered a

Cox-II inhibitor. Doctors recommend this drug over older drugs and over-the-counter remedies because they believe less stomach irritation will result. However, the trade off is that some scientists (and nutritionists) have argued that Vioxx® poses an increased risk of cardiovascular events. Some possible serious side effects include stomach bleeding, stomach ulcers, serious allergic reactions, serious kidney problems and serious liver problems. More common, but less serious, side effects include: headache, dizziness, diarrhea, nausea, vomiting, heartburn, swelling, back pain, tiredness and urinary tract infections. We could argue that the side effects would be worth it if the drug cured arthritis, but all we accomplish is limited pain relief. We pay a princely sum for a limited reward.

Another Cox-II inhibitor that has received a lot of negative publicity recently is Celebrex®. Celebrex® has the same list of side effects that Vioxx® touts, with a few more of its own. Celebrex® has been linked to increased risk of heart attack and stroke. Steven Nissen, MD and vice chairman of cardiology at the Cleveland Clinic stated that people taking Celebrex® are three times more likely to have heart attacks (CVD is already the number one killer; it doesn't need any allies). A formal study that appeared in the *Journal of American Medicine* (JAMA, August 22, 2001) confirmed Dr. Nissen's statement. Although Vioxx® and Celebrex® do not cure arthritis, and do not assist in healing one iota, billions of dollars worth of these drugs is sold each year.

Steroids

When over-the-counter and prescription NSAIDs no longer relieve the pain, the medical professionals call in the heavy artillery. Steroids such as Prednisone® are more powerful, but come with even more hideous side effects. Prednisone® is a synthetic hormone similar to hydrocortisone, a natural hormone produced by the adrenal glands. Prednisone® belongs to a loose group of drugs known as corticosteroids. Prednisone® does not cure arthritis, nor does it assist in the healing. It kills the pain and it does so with a plethora of side effects as its price. Those side effects include sodium retention, increased appetite, increased fat deposits, increased stomach acid, increased sweating (especially at night), increased hair growth, acne, bone and muscle problems, eye problems, growth problems in children, increased sugar in the blood, increased sensitivity to the sun, delayed wound healing,

decreased ability to fight infection, thrush, accelerated mineral loss from bones, negative effect on friendly bacteria in colon, and a subdued immune system, which leaves you open to far more dangerous diseases than arthritis.

Methotrexate®

Another popular arthritis drug is Methotrexate®. This drug alters the body's use of folic acid (a B-group vitamin) to relieve pain. As you notice, the common theme in drug therapy for arthritis is kill the pain at considerable cost in side effects. Methotrexate® is no different. It is even more discerning than the other drugs for two reasons. First, it is prescribed often in conjunction with NSAIDs. This combo means that you get a double helping of side effects. Second, one of the most serious side effects of Methotrexate® is that it inhibits and subdues the bone marrow. This action can lead to a condition where the key components of the blood – red blood cells, white blood cells, and platelets – are not manufactured with enough quality or quantity to perform their vital functions. This action can lead to diseases far more hideous than arthritis. This is over and above a myriad of minor side effects.

Surgery

When drugs no longer control the pain, only surgery remains in the arsenal. Hip replacements, knee joint replacements and the like are big business. In the United States, hip replacements are performed quite quickly after the medical profession diagnosis the need for them. In Canada, things are a little different. There is actually a waiting list for hip replacements. In a country of only 30 million people, currently 20,000 people are waiting to have their natural hip replaced with an artificial one. The effectiveness of hip replacements is also questionable, as many people have required multiple replacements. At last count, Elizabeth Taylor, the Hollywood movie icon, has had three hip replacements. She may be a movie legend, but I'm quite sure she only has two hips, just like the rest of us.

Each of the treatments documented thus far actually contributes to a worsening of the condition. The reduction of pain is not always in the best interest of the patient. Pain has many useful purposes. For example, without pain, if we put a hand on a burning hot stove element, we

would probably not realize it until we smelled the flesh burning. Inflammation in a joint has a protective function. Part of the inflammatory response of the body is white blood cells rushing to the scene of the problem and protecting the area. The downfall is that the same inflammation provides painful discomfort to the afflicted area. Thus, we can surmise that pain in an area is the body's mechanism to inform us that an area requires attention. Rather than heed that warning, we have become accustomed to taking a painkiller and then carrying on as if nothing was wrong. Conservative figures estimate that this bit of poor judgment intensifies deterioration in the affected area by three times or more. The analogy that I use in my many presentations to illustrate this point is that of a medieval warrior. Dressed in a bulky suit of armour (protective inflammation), he is uncomfortable (pain). If he gets hit by an arrow (degeneration) he will survive. If he gets uncomfortable and decides to remove the armour (takes a painkiller), the first arrow that comes along creates severe injury (triple the rate of degeneration).

Medical System in General

It is obvious that modern medicine is struggling with major illnesses. The state of medical care, in general, also leaves much to be desired. A new study found that one in five hospital patients experienced adverse effects due to inadequate medical care after leaving hospital and returning home. Medical errors account for more deaths than breast cancer or highway traffic fatalities. Prescription drugs accounted for negative effects on 66 per cent of the 400 patients involved in the study. The researchers concluded that more thorough examinations, better monitoring, and better information regarding drug interactions and side effects could reduce these negative events. This study appears in the February 4, 2003 issue of the *Annals of Internal Medicine*.

I believe that the current approach to the four aforementioned diseases is not an indictment of doctors, the medical establishment, or even of pharmaceutical companies; it is an indictment of the fundamental principles of the germ theory of disease. Although the germ theory has some value, using it exclusively without pertinent input from pleomorphic theory has led to the health care crisis felt all over the world. I would like to make this point perfectly clear; pleomorphic theory

would not magically cure worldwide disease. However, I do believe that if researchers began incorporating pleomorphic theory into their work, at least they would begin looking under the right rocks. Disease research presents a difficult challenge when you are looking under the right rocks; when you are looking under the wrong ones, as the score card presented would attest, the only result seems to be a futile waste of time and money. More money never fixes a problem of inefficiency; all more money does is create more expensive incompetence.

PART II

THE LIFE IS IN THE BLOOD

Chapter 4

Live Blood Observations

Homeostasis

The supreme goal of every capable microscopist is to achieve homeostasis or balance in his or her client's body. As non-medical practitioners we aren't all that interested in labels such as arthritis or lupus. Often the labelling exercise has little value. For example, a patient journeys into a doctor's office complaining of stiff hands. After numerous tests, countless specialists' appointments and expenditures of time and money, the patient receives the diagnosis of arthritis. *Arth* means *joint* and *itis* means *inflamed*. The patient with the stiff hands has just been told he or she has inflamed joints, seems a little redundant.

Homeostasis or balance can be difficult to achieve. As you will see in the third part of this book, there are many imbalancing forces. The microscopist is faced with a bevy of imbalancing enemies. Toxicities, both external and internal, and deficiencies can be great imbalancers. The greatest ally in the struggle for balance is the human body itself. In the words of the great philosopher Henry David Thoreau, "it is the job of the physician to keep the patient occupied while nature heals them."

Why Blood?

Why do we use blood? We have many other bodily fluids and substances, which are easier to extract. We could use saliva, perspiration, mucous, skin samples, urine, or feces, to name a few. The reason we use blood is because blood is a very unique substance with very unique properties.

A very influential theory in contemporary physics attempts to understand the universe through the model of a hologram. A hologram is unique because every part of it contains all of it. If you shatter a hologram into a hundred pieces and then look at each of these pieces, you would see the entire image in each piece.

Memories are recorded holographically in our bodies, which means that every cell in our body has recorded every experience in our life. The information gets passed on to new cells so although not a single cell exists in your body from 25 years ago, you can still remember things that happened back then. As is the atom, so is the universe; as is the macrocosm, so is the microcosm. One drop of blood is the same as every other drop. When you assess one drop, you assess all five litres, holographically.

Blood is the main transportation mechanism of the body. The tissues receive oxygen from the lungs and the lungs receive the by-product, carbon dioxide, for exhalation. Nutrients and metabolites are also transported to the tissues. Without a doubt, blood is the fluid of life.

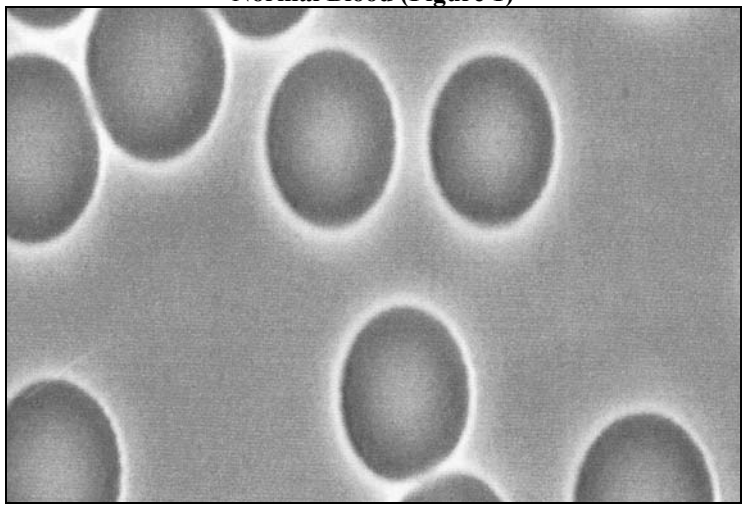
Although the total amount of blood in the human body varies based on body size, an average person would have approximately five litres of blood coursing through their blood vessels, delivering essential nutrients, and removing harmful wastes. The three main components of blood are red blood cells, white blood cells and plasma. Plasma is actually the liquid blood travels in. It is approximately 90 per cent water and accounts for just over half the volume. The other components of blood, red blood cells (also known as erythrocytes), and white blood cells (also known as leukocytes) are actually suspended in the plasma.

Red blood cells are red because they contain protein known as hemoglobin. As blood passes through the lungs, oxygen molecules attach themselves to the hemoglobin. As blood flows through the body, the hemoglobin releases the oxygen to the cells. Blood is the fluid of health, transporting disease-fighting substances to the tissues. White blood cells are an integral part of the immune system. When a germ or infection enters the body, the white blood cells race towards “the scene of the crime.” They also act as lookouts for signs of trouble. There are various types of white blood cells, each with distinctive and complementary functions. The most common types of white blood cells in the blood are classified as either granular or non-granular. Traditional blood tests rely on counts and ratios to determine if there are issues.

Counts and ratios that are off (too high or too low) indicate irregularities are present either in the blood, the rest of the body or both. Counts are certainly germane to the determination of homeostasis, but the viability of those same cells is far more important. What use to the body would a perfect count of inactive, disintegrating, disoriented white blood cells be? To use a military analogy – if the white blood cells are the soldiers and the lookouts in the body's battle against invaders, what would the right amount of soldiers matter if the soldiers were all ill-equipped and confined to the army base?

What Live Blood Looks Like

Normal Blood (Figure 1)



When blood is perfectly balanced (homeostasis), the red blood cells are loose and free flowing. Their colour is quite dark and slightly lightened in the centre (because red blood cells are actually biconcave disks). The red blood cells in the sample are all uniform in size (approximately seven microns). The red blood cells are predominantly round (not oval, oblong, jagged, or varying in size). The background or plasma appears clear, free of bacteria, fungus and other floating masses and debris. The white blood cells (neutrophils) are approximately twice as large as the red blood cells. There is approximately one white blood cell for every 700 to 900 red. They can occur in any shape, but they must have crisp, clean borders and have extensive movement.

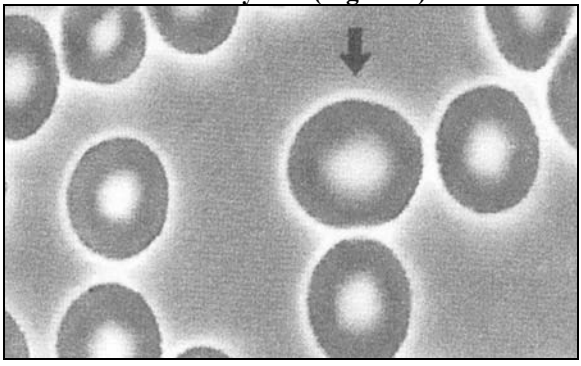
Some Common Imbalances

Red Blood Cell Variations

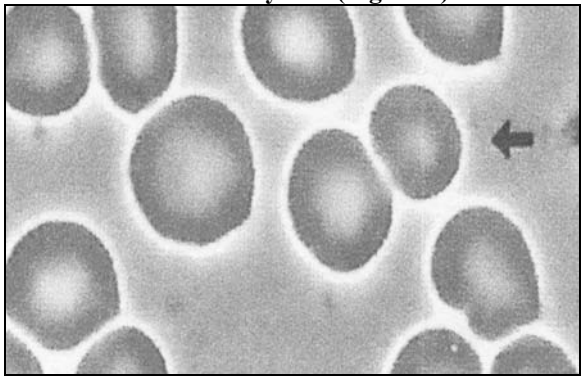
When a vast majority of the red blood cells viewed appear in ideal condition, the red blood cells are in a homeostatic condition. Occasional variations from the norm are attributed to the vast quantity of red blood cells produced by the body (approximately 15 million per second). When excessive variation in red blood cell appearance occurs, the microscopist becomes concerned about various potential imbalances. Figures two through nine illustrate some of the more common variations that can be observed in red blood cells.

Each of the imbalances can occur from disease as well as non-medical causes. Because nutritional microscopists are generally not medical professionals, they tend to base their advice and observations on client interview and observation. Microscopists recommend actions based on sound nutritional principles, not as replacements for medical treatment or diagnosis.

Macrocytosis (Figure 2)



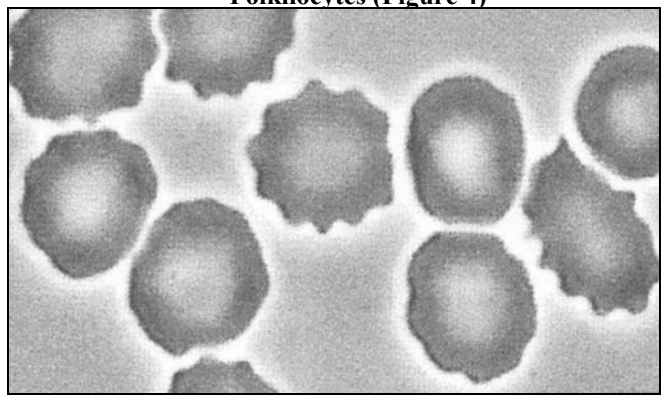
Microcytosis (Figure 3)



Red blood cells which vary in size, no longer perform their duties as effectively. When a substantial proportion of the red blood cells are bigger than seven microns in diameter, this condition is known as *macrocytosis* (Figure 2). When a large proportion of cells are smaller than seven microns this is referred to as *microcytosis* (Figure 3). If variations in size are observed to both extremes it is known as *anisocytosis*. Many nutritional deficiencies can cause these imbalances. These include deficiencies in Vitamin C, Vitamin B12, Folic Acid, Vitamin A, Vitamin E, and iron. They can also be caused by inadequate amounts of intestinal flora or poor digestion. Imbalances of this nature can also be associated with shortness of breath, fatigue, and light-headedness.

As we will explore in future chapters, vitamins and minerals do not operate in an isolated vacuum; they rely on each other for absorption, utilization, and transport. This led a well-known nutritionist to exclaim, "You can't always fix iron deficiency with iron!" This is one reason that a microscopist will not rely solely on the blood sample to determine nutritional recommendations. To do so would be at the peril of ignoring possible disease implications and/or recommending a course of action that may or may not be successful.

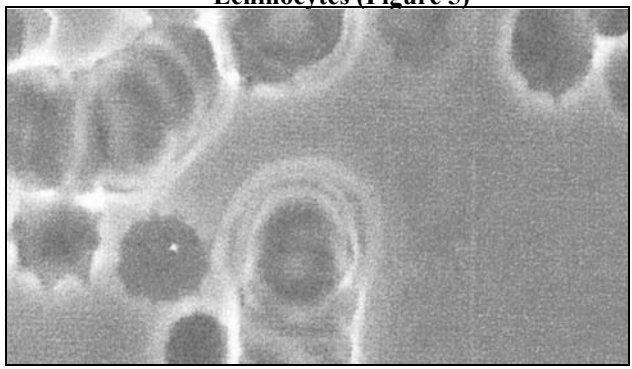
Poikilocytes (Figure 4)



Poikilocytes (Figure 4) are red blood cells that have edges shaped like a bottle cap. Sometimes microscopists colloquially refer to them as *bottle cap formations*. I do not recommend that microscopists use this term as it is scientifically inaccurate, albeit visually correct. Many factors can cause red blood cells to deform in this manner. One of the most common causes is prescription drugs (as well as, of course, illegal drugs). Other causes include lipid peroxidation or free radical damage, poor digestion of fats, low unsaturated fatty acids, food additives, ciga-

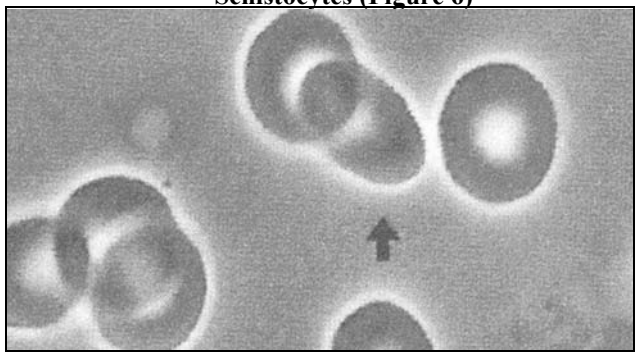
rettes and other tobacco products, environmental chemicals, exposure to radiation and toxins. *Poikilocytosis* is usually coupled with poor circulation, low energy and accelerated signs of aging.

Echinocytes (Figure 5)



Echinocytes (Figure 5) are red blood cells with sharp burrs or spikes. These red blood cells are dying. Even if one per cent of the red blood cells in a sample are spiked in this manner it is considered normal. In fact, if the client's spleen has been surgically removed up to two per cent is normal. Prescription drugs can cause higher percentages of echinocytes. Perhaps some of these side effects should be added to the plethora of side effects already listed by drug companies. Other causes for increased echinocytes include: free radicals, toxins, excessive alcohol, spleen stress and lack of essential nutrients. Excessive echinocytes can be associated with low energy, weak liver function, and weak cell reproduction.

Schistocytes (Figure 6)



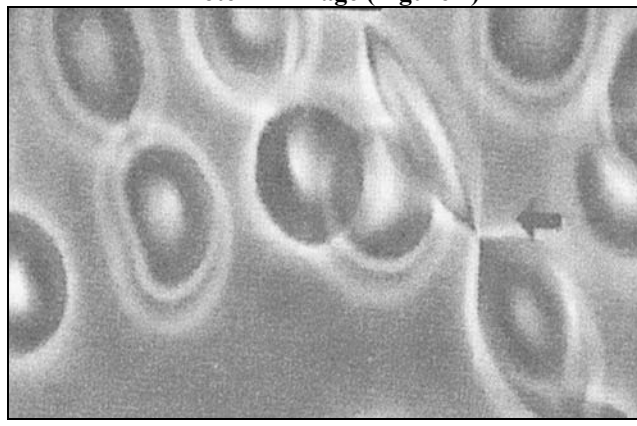
Schistocytes (Figure 6) are red blood cells with damaged cell membranes. The cell membrane is the perimeter of the cell and is responsible for cell integrity. When the cell membrane fragments or

turns fragile, the red blood cells no longer remain round. They can take many interesting and unusual shapes. The primary cause of schistocytes is inhaling fumes, smog, and tobacco. Excessive amounts of schistocytes are usually associated with low energy, fatigue, and possibly disease implications.

Red Blood Cell Formations

Sometimes, the condition of the blood cells is not at issue. Instead, the formation of these blood cells becomes the defining factor in the assessment. In homeostatic blood, the red blood cells are loose and free flowing, gently bouncing off each other. Often the blood cells will begin to align in undesirable formations. These formations add quite a complex dynamic to the blood. Red blood cells could be round, uniform, and in generally good condition, but if the formation is awry then homeostasis cannot be achieved. The most common of these formations are *protein linkage*, *rouleau* and *aggregation*.

Protein Linkage (Figure 7)

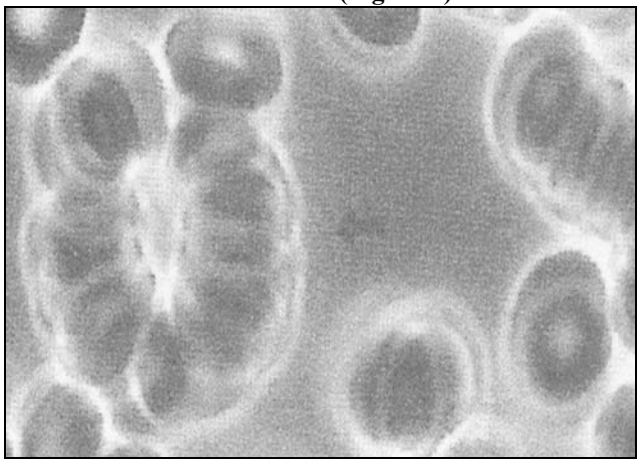


Protein linkage (Figure 7) is the first indication that the body's ability to digest is impaired. Protein linkage is characterized by red blood cells which appear to be linked by a fine strand. The connection between the cells leads to stresses on the cell membrane; these stresses alter the red blood cells' appearance. Rather than round, the red blood cells begin to appear lemon-shaped.

Protein is the hardest and most concentrated food processed by the body. Excessive amounts of protein, especially animal protein can be the culprit. However, to attribute protein linkage to excessive consump-

tion of protein in every case would prove far too simplistic an observation. Excessive stress, blood toxicity, digestion issues or an imbalanced pancreas can also cause protein linkage. When red blood cells are shaped in this manner they have a more difficult time transporting oxygen, and as a result many individuals with protein linkage are quite fatigued.

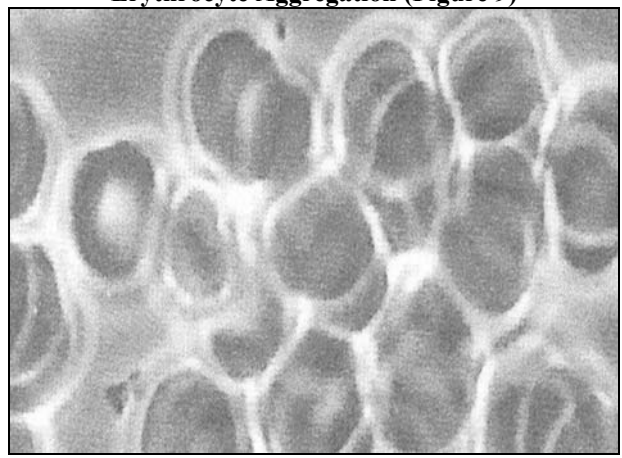
Rouleau (Figure 8)



The second alignment that is considered an imbalanced formation is *rouleau* (Figure 8). This alignment is often referred to as *stacked red blood cells* because the red blood cells appear to be piled on each other. One of the most underemphasized causes of rouleau is dehydration. Water effects more processes in the body than most people are aware. Because dehydration might only contribute to rouleau, this is a condition that doesn't usually respond to "take two glasses of water and call me in the morning."

Rouleau presents one of the more complex findings. Rouleau causes a reduction in cell surface area that can lead to a great impairment in the cells' ability to transport oxygen. Rouleau may also compromise the red blood cells' ability to exchange carbon dioxide and oxygen gases. Furthermore, red blood cells perform optimally when they are loose and free flowing. Rouleau's constriction of the cells can lead to further complications. It is also noteworthy that incompatible dietary lectins can create temporary rouleau for several hours after eating. Dietary lectins are explained fully in Dr. D'Adamo's book *Eat Right 4 Your Blood Type*

Erythrocyte Aggregation (Figure 9)



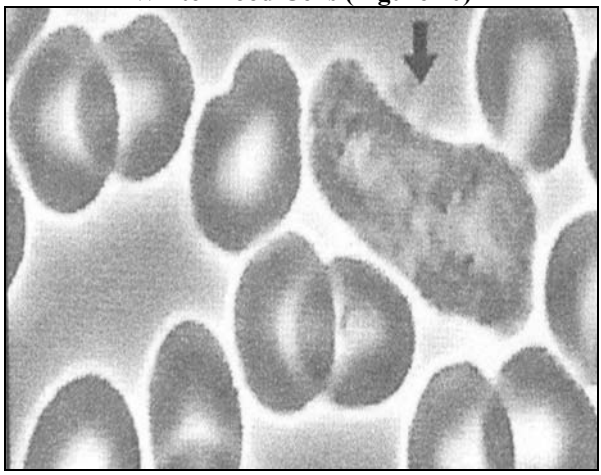
The third imbalanced formation that may be observed in the blood sample is known as *aggregation* (Figure 9). Erythrocyte aggregation, or blood sludge as it is commonly referred to, is a more severe finding than protein linkage or rouleau. Aggregation impairs capillary flow and blood gas exchange. The causes of aggregation are quite numerous. Long-term exposure to stress, toxic environment or both is usually implicated.

Aggregation can put an excessive strain on the heart and adversely effect circulation. Because this is a serious finding with many causes, a microscopist would be wise to recommend a program of general health and nutrition rather than addressing a myriad of probable causes, one at a time.

The last sentence of the last paragraph is a very important one and it would be easy to read without grasping its essence. I would like you to reread that sentence. The microscopist must use his or her expertise, client interview and observation in addition to the blood sample to create a plan of action. This is far more efficient than attempting to eliminate possible causes one at a time.

White Blood Cells

White Blood Cells (Figure 10)



White blood cells, or leukocytes (Figure 10) are one of the body's primary defences against disease and infection. Normal blood contains approximately one white blood cell for every 700 to 900 red. In the absence of disease and infection, it is normal for a visual observation to yield a low ratio of white blood cells to red blood cells. A higher ratio of white blood cells is a perfectly correct biological response to infection. A ratio of one white blood cell to every 500 red blood cells is usually an indicator that the body is fighting an infection; once the infection is neutralized, the excessive white blood cells get reabsorbed back into the system.

Although the blood has many types of white blood cells and even more types in the body as a whole, the microscopist is most concerned with two categories of white blood cells. The first and most common type of white blood cell is known as granular leukocytes. The microscopist will gather the most information about the immune system from this category of white blood cell. Granular white blood cells are further divided into *neutrophils, eosinophils* and *basophils*. Information can be gathered by observing each of these three types of white blood cells, but the most useful (and incidentally the most entertaining) of the three is the neutrophil.

Neutrophils comprise approximately 70 per cent of the white blood cells in the bloodstream. In essence, neutrophils are the vacuum cleaners of the blood. They lay their own liquid, just as a snail would, travel

in it, find invaders and pull them in. This is a process known as *phagocytosis*. By focusing on one neutrophil for several minutes, the microscopist can gain valuable insight into the immune system as a whole. This is another example of the holographic nature of the blood. Neutrophil viability is one of the most important assessments a microscopist can perform. The main criteria used for determining the viability of a neutrophil include size, condition and activity.

The size of a neutrophil is quite important. A neutrophil should be approximately twice as big as a red blood cell or approximately 14 microns in diameter. Although normal size is 14 microns, variations I have personally observed range from half the size of a red blood cell to over four times the size. The condition of the neutrophil is also a key indicator. By examining the white blood cell vis-à-vis established norms, a microscopist can judge, quite accurately, the condition of a white blood cell. Key determinants in this regard include the condition of the cell's border and segmentation.

The most useful criterion for establishing neutrophil viability is activity. This activity is where live cell microscopy distinguishes itself and establishes its superiority to traditional blood tests. The particles within the neutrophil, which appear as tiny black dots, have a very useful role to play. Ideally, many of them should be present actively streaming within the cell. There should also be great movement within the white blood cell, and the cell itself should also move about in the plasma at a rapid clip. Variations from my own observation range from neutrophils that do not move at all to neutrophils that move so rapidly I have to continually adjust my microscope to keep up with them.

To my knowledge, nutritional microscopy is the best method of observing neutrophil viability. I have performed live cell microscopy on many medical doctors and they all commented that they had never seen a white blood cell move in the past; although they had all seen countless "dead" white blood cells during their training.

Traditional blood tests are primarily concerned with the amount and ratio of the various white blood cells. The ratios and tally are certainly important in a diagnostic setting. The limitations of traditional blood testing were apparent to one medical doctor whose blood I had just finished assessing. He was quite taken with my technology and he quipped, "Of what use is a good white blood cell count if they all just sitting there like Humpty Dumpty?" The good doctor articulated such a major advantage so eloquently that I still refer to this quotation in my presentations.

Weakness in white blood cell viability can be attributed to many factors. The difficulties experienced by the white blood cells can be caused by simply not having enough minerals in the body. Impaired function can also be attributed to weak organ function, specifically bone marrow, spleen, liver, colon, bladder and kidneys. Yeast imbalance, lack of exercise, excessive consumption of alcohol, and a myriad of other factors can also cause this impaired function. Poor sleep can also reduce immune function by up to 30 per cent. It is here that the microscopist is aware of a very important fact which I will reiterate. Because immune system function is so important and since so many factors can cause a weak immune system, a microscopist will usually attempt to balance the body as a whole. Although several herbs, vitamins and formulas are designed to improve immune system performance, if the client consumes any of these, it is still wise to concentrate on improving the balance of the body as a whole. Pleomorphic theory demands it. Holistic medicine demands it. The utter failure of symptomalogical approaches in these instances makes it a necessity.

Plasma

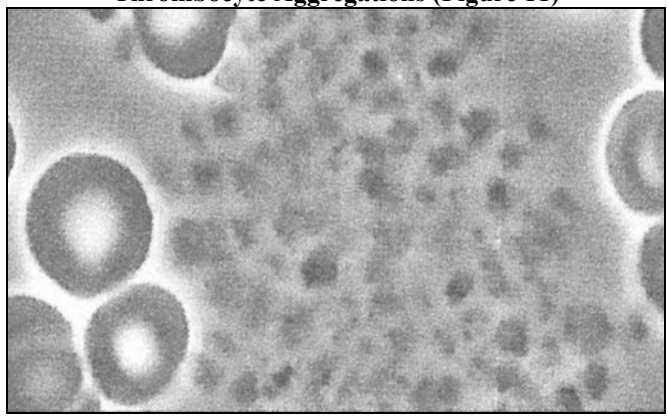
As I have already noted, plasma is simply the liquid that other components of the blood travel in. Consequently, it would be an easy assumption to make that its value is negligible. Nothing could be further from the truth. Some individuals, microbiologists and scientists (some of whom I know personally), consider plasma so important that they have presented theories postulating that plasma is the *only* key to health. Keep the plasma in pristine condition, the theory states, and regardless of all other factors, health and longevity will be yours.

I certainly consider the plasma to be a key piece of the health puzzle; it is a major part of the "terrain" Enderlein and Béchamps alluded to. Even if I concede that the plasma is a very large piece of the puzzle, I cannot agree with the theory that the plasma is the entire health puzzle. To convey the importance of the plasma to my clients, I frequently employ a suitable analogy. If I were to set out on a 100-kilometre or 60-mile drive on a beautiful Sunday morning on a newly constructed, well-maintained super highway, I would experience an enjoyable trip. This trip would probably take about an hour. Imagine taking that same trip during a snowstorm, on a poorly maintained highway filled with potholes, tire debris and other obstacles. That joyous trip would turn into a stressful marathon session of swerving to avoid obstacles. The trip would take several hours and be no fun at all. As you may have

guessed, the highway in this analogy is plasma; the motor vehicle is the other blood components, and the potholes and debris are the imbalances that sometimes show up in the plasma. We will now take a closer look at some of the more common potholes and debris.

Thrombocyte Aggregations

Thrombocyte Aggregations (Figure 11)



Thrombocyte aggregation (Figure 11) is an abnormal grouping. Thrombocytes are more commonly referred to as platelets. Platelets are small, enucleated bodies which are key to the body's homeostatic process. Whenever the endothelial lining of a blood vessel is damaged, the platelets rush to the area and form a plug. If the body is balanced, the microscopist can observe platelets; they are very small, only two to four microns in diameter. When the body is imbalanced, as in figure 11, the platelets form larger masses known as aggregations.

Platelets are the clotting agent of the blood, so any abnormal agglomeration is quite ominous. Circulation, blood clots, capillary blockage and general negative effects on the heart are some of the concerns associated with thrombocyte aggregations. The amount of aggregations and the average size of the abnormal clusters are determining factors in assessing the severity of the imbalance.

Some of the more common causes of thrombocyte aggregation include high triglycerides, excessive consumption of caffeine or carbonated beverages, low consumption of Omega-3 fatty acids or dehydration. Generally these aggregations seem to respond quite well to nutritional and lifestyle improvements. If they do not, it is essential that a qualified health care provider perform further tests.

From a pleomorphic perspective thrombocyte aggregations are an interesting phenomenon. Platelets are of a pleomorphic nature. As such, platelets can grow arm and leg type appendages; some of which can extend like a web across a large space. Much research has concluded that the ferments of platelets are actually different from human cells. Plant enzymes have actually been identified in platelets. This means that platelets are living organisms, and can change (pleomorphically) based on the environment provided them. Maintain an environment of homeostasis and they remain two to four microns in diameter and perform many important functions in a symbiotic relationship. Subject these same platelets to an imbalanced environment and they will grow to an undesirable size and shape. The greater the imbalance, the more masses the microscopist can find.

Bacterial Forms

Bacterial Forms (Figure 12)

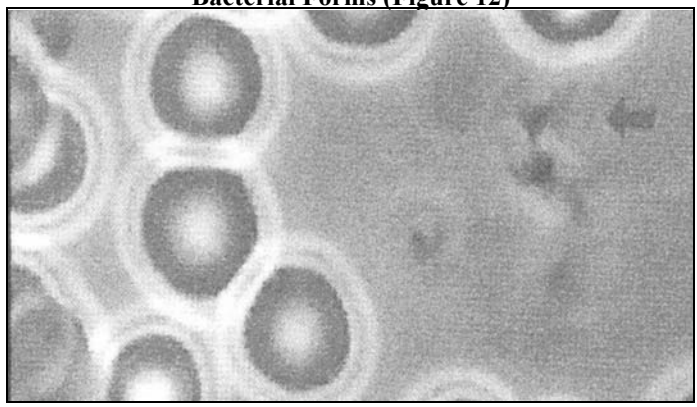


Figure 12 is an example of a bacterial form. Hundreds, if not thousands of different types of bacterial forms can be observed in the blood. Professor Enderlein dedicated much of his life to identifying and cataloguing the various incarnations of bacterial forms. The microscopist is most interested in three aspects of this "plasma debris." First, the microscopist must ascertain the type of bacterial form present. Is the type viewed apathogenetic or pathogenetic? Second, the microscopist must be concerned with the quantities of such forms. When the microscopist observes only a few such forms, the microscopist usually dismisses it due to minor variances between samples. If, on the other hand, the sample teems with forms, there is cause for concern. Finally, the degree of mutation is also important. As the blood begins to dry out, bacterial forms begin to change into higher valance entities.

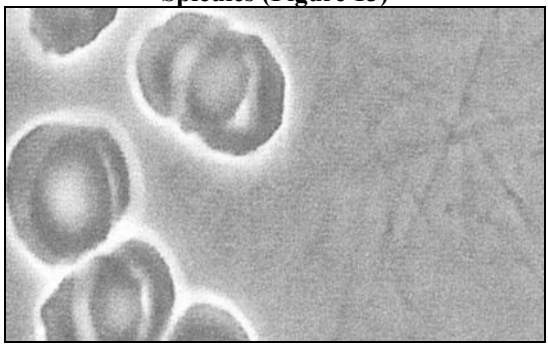
With every assessment a microscopist cannot help but witness the validation of pleomorphic theory. Those members of the traditional medical establishment that are proponents of pleomorphic theory have been convinced in large part due to observations made during live cell microscopy sessions. Even in the narrowest definition, that a single organism can exist in distinctively different shapes, we cannot dispute pleomorphic theory after seeing it. I have personally convinced many doubting members of the mainstream medical community in exactly this fashion. To disbelieve a theory is one thing, but to disbelieve a theory after observing the empirical evidence firsthand is another. No member of the mainstream medical community who has witnessed pleomorphic theory can continue disbelieving it and remain in integrity.

Dr. Andrew Weil, an author and famous member of both the traditional medical establishment as well as the alternative healing arts, is most concerned with what he calls the close-mindedness of the traditional medical establishment. He finds this close-mindedness the complete antithesis of the scientific approach, which is open-minded scepticism. Pleomorphic activity exists in live blood and I invite all the open-minded sceptics to see it for themselves. I am prepared to take any of you on a personal tour. As for the closed-minded members of the traditional medical establishment, and according to Dr. Weil there is a lot of you out there, I can only remind you of the old saying that a mind is like a parachute; it only works when it is open.

The main purpose for observing bacterial forms is for benchmarking. If in subsequent sessions, there are fewer forms and they are of lower valance, the microscopist can conclude that the body is moving towards homeostasis. The reverse would also be the case if an increase in amount, valance or both occurred.

Fibrin/Spicules

Spicules (Figure 13)



One of the most interesting observations of live cell microscopy is *spicules* (Figure 13). Fibrin are known by many names including fibrin, fibrogen, spicules, and filits. On the screen spicules resemble scratch marks. They run the gamut from barely noticeable to so intensely thick that it is difficult to see the plasma itself. Spicules denote congestions and over acidification of the connective tissue. Many factors cause the appearance of the spicules, but the most common seems to be liver and colon stress. When observing spicules, a nutritional microscopist may be inclined to recommend a liver cleanse, colon cleanse or both. If other factors cause the spicule formation, liver and colon cleansing is not a wasted and unnecessary procedure. In fact, many prominent people within the nutritional community (myself included) recommend annual liver and colon cleansing for all.

The Liver

The liver is truly an amazing organ. Except for the skin, the liver is the largest and arguably the most important organ in the body. The liver has over 500 documented functions. My clients frequently are privy to the warning "when the liver goes, we go!" That assertion may not be completely accurate (in deference to transplants and other marvels of modern medical science), but it certainly does convey to my clients exactly how important I consider the liver. Some of the more noteworthy functions of the liver are:

- creates a liquid called bile, which the body uses to break down fats stores excess sugar in the form of glycogen
- removes toxins from the blood, especially when the kidneys are overloaded
- absorbs nutrients from foods and supplements
- detoxifies pollutants that enter the bloodstream
- processes prescription drugs
- filters two and a half litres of blood per minute
- holds approximately one quarter of the body's blood at all times.

The function of the liver is so complex and extensive that entire books have been written exclusively about the liver. The simplest explanation for the function of the liver is that it works as a filter. In mechanical devices, we either replace filters regularly, for example our automobiles, or we clean them. Every artificial chemical (including

food dyes and all those ingredients in your breakfast cereal that you can't pronounce), pesticide, and hormone that enters our system must be metabolized. Enzyme pathways within the liver perform this function with remarkable precision. As the trappings of modern society expose us to more and more of these toxins, our livers are becoming more and more overloaded. Some "healthy" people use over 60 per cent of their livers for storage of toxins.

Periodic liver cleansing is essential to good health. Once a year is certainly adequate for most healthy people. All automobile manufacturers recommend more frequent oil filter changes if the vehicle is subjected to harsh treatments. Similarly, people who put undue strain on their livers should cleanse more frequently. Some of the most common strains on the liver include removal of one's gall bladder, having diabetes or heart disease, living near pollution or radiation, taking heavy medication, drinking heavy amounts of alcohol, and consuming heavy amounts of processed foods. The more of the aforementioned stresses the liver is subject to, the more often you need to cleanse.

The Colon

When the late Dr. Bernard Jensen, a chiropractor coined the phrase "death begins in the colon," his medical contemporaries laughed. With the advancement of medical science, drugs and surgery, why be overly concerned about just another organ, they mused. Dr. Jensen died recently at nearly 100 healthy years of age. I assure you those who laughed did not fare so well because the average life expectancy is approximately 75 years and even less than that among doctors. I think Dr. Jensen was on to something.

The colon is designed to eliminate the toxins of the intestines, blood and lymph systems. The colon is the end portion of the gastro-intestinal system. The GI system is the plumbing system of the body. The colon is a muscular, porous tube, which should be two and one half inches in diameter. It has three main functions. First, the colon absorbs water and certain nutrients. Second, the colon actually manufactures certain vitamins such as K and the B group. Finally, the colon is responsible for eliminating toxic substances from the body.

The colon contains nearly 60 varieties of friendly bacteria. Friendly bacteria or friendly flora as they are sometimes called, promote nutrient production, proper PH balance within the body, and keep the unfriendly bacteria at bay. The average person should have two pounds of friendly bacteria in the colon. A person with a healthy colon will have two to three bowel movements per day.

The elimination should be easy; the stool should be formed, and there should be no offensive odour.

Very few people have an ideal colon. The bacteria ratio within the colon should be 80-20 in favour of the good. In most people, that ratio is reversed with 80 per cent of the bacteria in the colon of the bad variety. Constipation, diarrhea and other bowel irregularities are quite common. Most bowel movements are accompanied by quite a powerful stench.

The most common cause of colon imbalance is the lack of friendly bacteria. Many of the trappings of modern society are affecting the colon adversely. Negative impacts on the colon of modern society include: chlorinated water (chlorine kills bacteria good and bad), antibiotics (They don't differentiate between good and bad bacteria; they kill all bacteria), Prednisone®, Cortisone®, oral contraceptives and other hormonal agents, and caffeine.

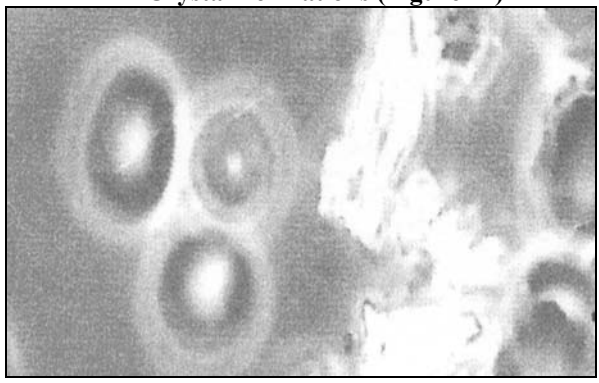
The lack of friendly bacteria can lead to many problems including inefficiency in the colon. As previously stated, a colon should be two and a half inches in diameter; a colon can however, expand to over nine inches in diameter. Rather than holding three meals it can hold eleven or more. Eleven or more meals in your colon for days or even weeks can cause quite an overload. Is this common? After 10,000 sessions and many years observing this phenomenon, I can unequivocally state ABSOLUTELY. Sometimes people are lulled into a false sense of satisfaction with colon function simply because they have one bowel movement per day. If that bowel movement is eliminating meal nine, 10 and 11 which were subsequently replaced, then the colon is contending with at least nine and up to 11 meals continually.

If a house or other building's sewage system backs up, then the whole property suffers. And so it is with the colon and the body as a whole. Dr. Jensen was right; death does begin in the colon. On this point, I am sure. But I am equally sure that it does not have to be so for you. If you think you may require colon cleansing, discuss it with your health care professional. Colon cleansing can be performed with products you consume orally or it can be performed rectally using colon irrigation.

I would like to make one final point regarding the colon. Because colon issues are rampant in modern society, and because many people misguidedly consider the only criterion in evaluating a healthy colon is having one bowel movement per day, the sale of laxatives is at an all-time high. Laxatives do not clean the colon. Laxatives, including herbal laxatives, do evacuate the colon, but they perform this function by shocking the colon into spasm. Laxatives are a bad product and will only exacerbate the bowel problem over time.

Crystal Formations

Crystal Formations (Figure 14)



When you look at live blood, you see that the *crystal formations* (Figure 14) stand out the most. In sharp contrast to the bland background, these unusual and brightly coloured occurrences appear quite striking.

Many different types of crystal formations can be encountered. Trapezoidal formations are usually an indicator of cholesterol. The existence of cholesterol is not significant unless observed in large quantities. Although cholesterol is an essential nutrient, which means the body cannot survive without it, the medical establishment has succeeded in turning cholesterol into the most evil of substances. Do not fear this essential nutrient, for it is a noted fact that as many people die with normal cholesterol levels from strokes and heart disease as do those with elevated levels. Cholesterol has become the perfect scapegoat of the medical establishment. Cholesterol-lowering drugs, the so-called statin drugs, are effective at lowering serum cholesterol levels; however the science behind the necessity of doing so is dubious, at best.

Crystals that resemble broken glass are the more serious of the crystalline structures. These formations are actually triglycerides or artheroscleratic plaque. Many of these formations can occur, often bigger than the red blood cells. As the amount seen in the blood represents only a small portion of the total plaque on the arterial walls, these formations are of concern.

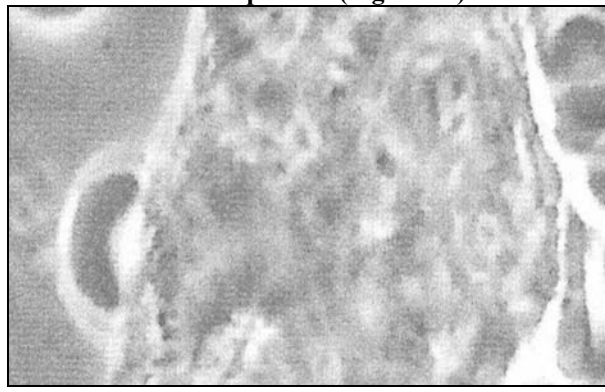
Brightly coloured crystals vary in significance based on the colour observed. Orange or brown crystals can indicate liver or gall bladder

imbalance; red crystals can indicate chemical or metal toxicities; blue crystals can indicate thyroid imbalance; yellow crystals can be associated with excess uric acid production and white crystals can indicate kidney imbalance. Their shape can also indicate differences; for example both circular and square shaped crystals are indicative of specific imbalances.

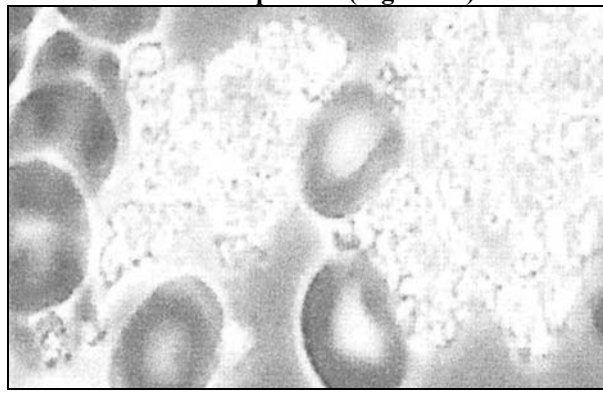
With crystal formations, the key assessing factors are the type of crystal and the quantity observed. Large amounts of crystals show an imbalancing force within the body and all attempts should be made to promote homeostatic intervention.

Protoplast

Protoplasts 1 (Figure 15)



Protoplasts 2 (Figure 16)

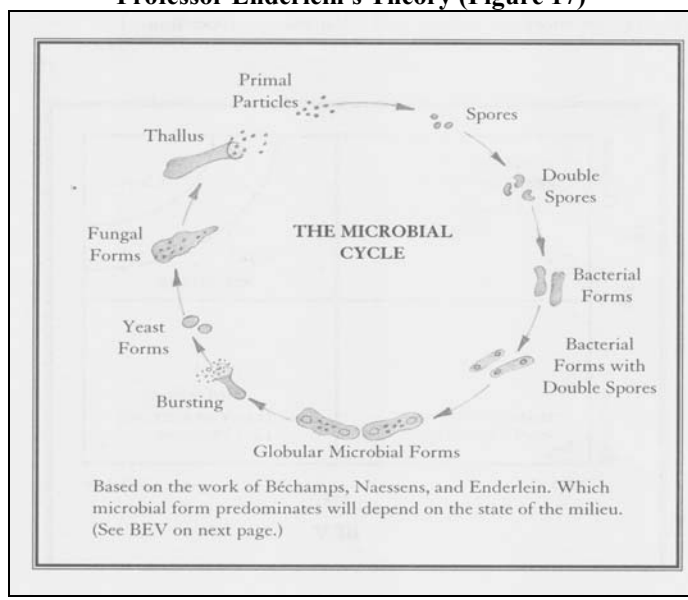


As far as I know, *protoplasts* (Figure 15 and 16) have more names than any other blood conditions. Some of the more common names for

this type of formation include protoplast, symplast, colloid symplast, spheroplast, thallus, fibrous thallus, progenitor cryptocides and cell without a nucleus. Protoplasts look like rocks in the blood plasma and can be round or oblong; they also can have smooth or jagged edges. They can vary in size from the size of a red blood cell to gigantic (relative to a microscopic world, of course). In small numbers, they are usually discounted due to variances between samples. In larger quantities, it is an unfavourable observation. Their size alone can create a hindrance to proper blood circulation. Protoplasts also indicate altered biological terrain. They can denote blood toxicity and are more readily observed in disease conditions such as diabetes. A declining number of protoplasts observed over several sessions is a strong indicator that the blood is moving towards a condition of better homeostasis. Of course, the reverse is also true. A microscopist will use the type, quantity, and size of protoplasts over time and cull a great deal of information about the general direction of the client's health.

The Cell Rupture Test

Professor Enderlein's Theory (Figure 17)



One of the most useful tests a microscopist can perform is the *cell rupture test*. The microscopist performs this test towards the end of the session. By applying force to the top of the glass slide, a microscopist

can actually force the collapse of the red and white blood cells. This collapsing leads to the cell contents emptying directly into the plasma. By destroying the cells, we create a large amount of cell fragments. These cell fragments provide excellent food for the bacterial forms and we witness a feeding frenzy immediately after rupturing the cells.

As noted earlier in this chapter, we can observe bacterial forms in the plasma. These same forms can also enter the red and white blood cells. Although many varieties of forms exist, there are a total of 16 stages. The more of the upper level stages we observe, the more imbalanced the blood. The accompanying chart illustrates the 16 stages, according to Professor Enderlein's theory (Figure 17).

The amount of pressure required to actually break the cells also indicates the cell strength. When we consume high levels of essential fatty acids, our cell membranes become quite resilient. When the majority of our fats are the undesirable kinds such as trans fats, hydrogenated oils and other fake or man-made fats, the integrity of the cells suffers. A more in-depth discussion of fats will appear later in the book. At this point it is enough to state that good fats make good cells and bad fats make bad cells.

You would find it difficult to locate a member of the traditional medical establishment who has heard of the cell rupture test. Traditional microbiologists and lab technicians are concerned about size of cells, quantity of cells, condition of cells and ratio of cells vis-à-vis other cells. They are not taught about the potential invaders of cells and their significance. For entertainment value, the next time you are dealing with any member of the traditional medical establishment tell them that your microscopist noticed a synascit (upper valance bacterial form) after performing the cell rupture test. You should find the reaction amusing.

Summary

The preceding pages have explained and illustrated some of the more common conditions noticed in blood samples. There are many more conditions that I omitted due to the size constraints of this book. My intention, however, was not to furnish the reader with an exhaustive listing of every conceivable blood condition. My intention was to demonstrate some of the more common and pertinent conditions that we observe. Part III of this book will focus on the imbalancing forces that lead blood to conditions away from homeostasis. Part IV will focus on the solutions that I have observed play an integral role in returning to or maintaining homeostasis.

PART III

THE PROBLEMS

Chapter 5

Those Poor Soils

In the spring of 2000 I was asked to do a nutritional presentation in Ottawa, Ontario, Canada. Ottawa is the capital of Canada and unbeknown to me, one of the 70 or so people in attendance was a high ranking official in the Canadian Ministry of Agriculture, the branch of government, that among other functions is responsible for the soils. All my presentations include a commentary on the poor condition of North American soils. At the conclusion of the presentation the Canadian Government official approached me at the front of the room. This official is an imposing figure who stands about 6'4". He put his hand out and introduced himself. In all honesty, at this point, my heart must have skipped a beat because I was certain he planned to chastise me for denigrating *his soils*. Even if he agreed with my assessment, I speculated, I would probably still experience his wrath for calling attention to a less than perfect situation.

He didn't chastise me. Instead, he stated, "You're dead on about our soils, in fact, in many ways they are even worse than you say!" With newfound courage I put my hands on my hips and asked, "So what's being done about it?" He replied, "not a hell of a lot!" That day, a high-ranking official in the Canadian Government confirmed for me what I had researched in books and seen before my very eyes in blood samples. So what exactly is wrong with our soils?

Starting in the early 1900s there was a noticeable reduction in crop yields in the United States. As farmers are paid for tonnes and bushels, they were justifiably alarmed. Teams of experts were hired to investi-

gate this phenomenon and until 1945, no progress was made in rectifying this situation.

In 1936, Dr. Charles Northen identified the problem. I consider Dr. Northen to be the pioneer of the nutritional revolution we are presently experiencing. Like many pioneers, the mainstream have maligned him, but we can no longer ignore his Nostradamus-like predictions. Dr. Northen concluded that the crop problems were caused by a lack of minerals in the soils. He further concluded that this lack of minerals would cause disease in people and animals that ate foods grown in these soils. The United States Government deemed his views so important that the U.S. Senate ordered his article printed. The article is referred to as U.S. Senate Document 264. I have reproduced verbatim unabridged extracts of the most pertinent aspects in Appendix A of this book.

We must put this soil problem in historical context. The United States Government was aware of the problem, but Dr. Northen presented his revelations during the height of the Great Depression. Even during economic boom, remineralizing soils would prove expensive. During a depression the cost would be prohibitive. So the United States Government conveniently ignored the problem. For excuses, first they cited the Depression, and then the Second World War.

In 1945, the United States Government ran out of excuses. Unfortunately, it did not run out of bomb-making materials. The multi-billion-dollar fertilizer industry was born in 1945 essentially recycling left over bomb-making materials. Crop yields increased dramatically almost overnight. The farmers considered the problem solved. However, we still feel the nutritional and health implications today.

In 1845, Justin von Liebig, Professor of Chemistry at the University of Geissen, postulated that chemicals actually interact with human beings. Furthermore, he promoted the concept that plants only needed four minerals to grow. Three of those minerals, nitrogen (N), phosphate (P), and potassium (K), are found in modern day fertilizers known as NPK fertilizers. NPK fertilizers replace the need to practice soil conservation. NPK fertilizers create maximum yield, not maximum nutrition. Minerals are stripped from the soils in many ways: repeat cropping, grazing, and rainfall are three of the most notorious depleting activities. The average plant strip-mines up to 60 minerals from the soil. NPK fertilizers return three. If you had a bank account where everyday you withdrew $60 and deposited $3, how long would it be before you were bouncing checks? We've been bouncing nutritional checks

for over half a century. Dr. Northen predicted the decline in health in 1936. Consider a few facts:

- In 1936, no cancer hospitals existed
- in 1936, no children's hospitals existed
- in 1936, no children's wards in cancer hospitals existed
- in 1936 Alzheimer's disease and chronic fatigue syndrome did not exist
- fibromyalgia, and a host of other diseases did not exist
- in 1936, diabetes rates were low
- in 1936, 8 million children didn't need Ritalin® (a narcotic) for behavioural issues

Our soils were and are sick. Dr. Northen stated, "Sick soils means sick plants, sick animals, and sick people." If our soils were sick in 1936, what has more than half a century of "technologically advanced" farming done to improve the situation? The Earth Summit was held in Rio in June of 1992. The Summit reported the following declines in mineralization:

- African continent soil depletion was calculated at 74 per cent
- Asian soil 76 per cent
- Australian 55 per cent
- Europe 72 per cent
- South America 76 per cent
- North America a dismal 85 per cent.

At least we're not alone. I suspected that world wide soils were depleted because the vast majority of blood that I assessed from people outside North America showed the same signs of mineral deficiency as the local samples.

We cannot blame humans only for the poor state of North American soils. The minerals that are in the soils were created in the nuclear furnace of the sun. Minerals were distributed in varying amounts and at different levels among the earth's crust. Minerals cool and solidify at different temperatures. This is why gold is found in veins, like chocolate ripple ice cream, and not uniformly blanketing the earth.

Plants combine the sun's energy, gases, water and minerals in the soil into substances necessary for their existence. Plants do not manufacture minerals in the same way they manufacture vitamins and other nutrients. If minerals are not in the soil, they are not in the plant. If broccoli is grown in selenium-deficient soils, it has no nutritional selenium. It doesn't matter what the dietician says; it doesn't matter what the four food groups say; it doesn't matter what the vegetarian says; if there is no selenium in the soils, there is no selenium in the crops grown in that soil. Period. Selenium is only one of many minerals that are deficient naturally in North American soils.

Although we will explore the nutritional impact of poor mineral consumption in later chapters, an illustration is necessary at this point. Selenium is a trace mineral and the body requires only a small amount each day. Areas of Georgia and the Carolinas with extremely low selenium levels are known as the stroke belt of the United States. The cancer connection is even more compelling. The lowest levels of selenium in the United States are in Ohio and the highest levels are in South Dakota. Cancer mortality rates are double in Ohio and no other appreciable risk factors exist there. This is not an isolated occurrence; throughout the world areas of low selenium have higher cancer rates.

The dismal treatment our soils have received at the hands of modern society has exacerbated inherent inequities in the mineral distribution. There is no doubt that the worldwide soils have been sick for the better part of a century. To argue otherwise is to deny the facts. Senate Document 264 states that there are few minerals left in the soils. The Rio Summit in June of 1992 arrived at the same conclusion. My high-ranking official in the Canadian Ministry of Agriculture was even more pessimistic. Professor Henry Cantwell Wallace, Iowa State College of Agriculture, stated it when he exclaimed, "Nations endure only as long as their topsoil." Just about every knowledgeable person with a vested interest in this field (no pun intended) has unequivocally asserted the same fact; the soils are sick and we, as a species are doing nothing to curtail the demise.

Chapter 6

Essential Nutrients

Our bodies are nothing more than a very complex chemical factory. Approximately 70 per cent of the weight of this factory is water. If you could remove that water you would be left with a few pounds of chemicals that would fill an average size breadbox. It stands to reason that water plus the contents of that breadbox would be very important to the function of this chemical factory.

Our dry weight is primarily composed of essential nutrients and protein. Nutrients are labelled essential for two distinctive reasons. First, the body does not manufacture essential nutrients. Instead, they must be ingested in either food or supplement form every day. Second, the body requires essential nutrients to function. If essential nutrients are lacking for any length of time, disease and imbalance will result. Approximately ten diseases have been attributed to deficiencies of each of the 92 essential nutrients. That's a staggering 900 diseases that are preventable through proper consumption of essential nutrients.

The 92 essential nutrients are broken down as follows: 60 of them are minerals, 16 are vitamins, three are essential fatty acids, and 12 are amino acids. The final essential nutrient is water; a substance so important, and yet so misunderstood, it garners its own chapter.

60 Minerals

Minerals are the key to a person's overall health. As 60 of the 92 essential nutrients are minerals, it is logical that by sheer weight of

numbers they would be important. The human body is inconceivable without minerals. Every living cell on the planet cannot function without minerals. A complete list of all the functions carried out by minerals in the human body is so vast that it would be difficult to compile. For our purposes, here are some of the more important functions of minerals in the body:

- formation of blood and bone
- maintenance of healthy nerve function
- proper composition of bodily fluid
- muscle tone, including muscles of the cardiovascular system
- all enzyme functions
- proper PH balance
- absorption and utilization of all essential nutrients.

There are two categories of minerals. The first category is referred to as the bulk minerals or macrominerals because we require them in large quantities. These include minerals such as calcium, magnesium, sodium, and phosphorous. The second category is known as trace minerals because we require them in minute quantities. Examples of these types of minerals include selenium, copper and boron. Trace minerals are no less important than their hefty counterparts.

Most people are mineral deficient. As we have seen in the previous chapter, soils worldwide are deficient in minerals. If the soils are deficient, then the plants are deficient. If livestock eats deficient plants, then their flesh will not be as nutrient dense. If the plants are deficient, then the people are deficient. The extent of the deficiency in our food supply is appalling. Take for example these recent reports:

1) According to the *American Journal of Clinical Nutrition* 54, 2B1S-2B7S (1991) all grains and vegetables produced during the agricultural revolution had generally poorer mineral content

2) In the April 2002 edition of *Medicine Today,* it was reported that iron in spinach has dropped 60 per cent in the last 50 years, and remember spinach wasn't all that good 50 years ago to begin with

3) In the same issue of *Medicine Today*, broccoli has lost 75 per cent of its calcium; carrots have lost 75 per cent of their magnesium, and watercress has lost 93 per cent of its copper
4) In the same issue of *Medicine Today*, 27 varieties of vegetables assayed have lost 16 per cent of their potassium, 24 per cent of their magnesium, 27 per cent of their iron, 46 per cent of their calcium, 49 per cent of their sodium, and 76 per cent of their copper.

These are only a few examples of the poor condition of our food supply. A chiropractor named David Thomas noticed that some of his patients, despite eating a healthy diet, showed signs of mineral deficiency. He suspected the nutritional quality of the food and that led him to compile a study on the mineral depletion of the foods available to us over the period 1940 to 1991. It was a British study but the results are pertinent for North Americans. He used data from five editions of *The Chemical Composition of Food*, written by McCance and Widdowson and published under the auspices of the Medical Research Council, and later the Ministry of Agriculture, Fisheries and Food and the Royal Society of Chemistry. The most frightening statistics were culled due to Dr. Thomas' interest in the rate of change. His fears were confirmed; the rate of depletion of minerals is actually accelerating. For instance, vegetables as a whole lost 57 per cent of their zinc from 1978 to 1991. We can only imagine the state they are in today, a full 13 years later.

Some other figures that have voiced their opinions on the value of minerals for health include some of the most notable names in the medical world. Dr. D.W.Cavanaugh, M.D. Cornell University, stated, "The most neglected area yet to be fully researched is the subject of minerals and trace minerals. This is remarkably curious as minerals and trace minerals are *the very building blocks of all life forms* (author's italics)." Through erosion and poor farming practices, the soil has become nearly exhausted of these vital elements. Dr. Linus Pauling, winner of two Nobel Prizes stated emphatically, "You can trace every sickness, every disease, and every ailment to a mineral deficiency." The medical establishment's view on this matter seems to be that every sickness, every disease and every ailment is caused by a deficiency of drugs, surgery, chemotherapy, and radiation. To reiterate a most important point; the soils are virtually devoid of minerals and consequently

most human beings are deficient in minerals. All diseases can be traced to a mineral deficiency. This goes a long way to explain why degenerative disease is rampant and our hospitals are full.

16 Vitamins

Vitamins are vital to life. By regulating metabolism and assisting in biochemical processes of all types, vitamins promote good health. They are termed micronutrients because they are needed in small quantities vis-à-vis nutrients such as carbohydrates, fats and proteins. Vitamins are sometimes referred to as coenzymes because vitamins work synergistically with enzymes to create many bodily functions. There are two categories of vitamins. Water-soluble vitamins must be consumed daily since the body cannot store them and will secrete excess amounts. For this reason it is very difficult to overdose on water-soluble vitamins. Water-soluble vitamins include the B-complex vitamins and vitamin C. Oil-soluble vitamins can be stored for longer periods of time in the body's fatty tissues. These include Vitamins A, D, E, and K.

The mainstream media has reported much about the importance of vitamins. Many people make the mistake of supplementing only for vitamins. This is an exercise in futility for one very important reason. Minerals are involved in every metabolic function in the body. If you are deficient in minerals, you not only do not absorb the vitamins in your food, but you also do not absorb the vitamins in your supplements.

12 Amino Acids

Amino acids are the building blocks of the human body. Amino acids are the component parts of protein. Protein makes up the majority of human dry weight. Protein substances make up the ligaments, muscles, tendons, organs, glands, nails, and hair. Proteins also form the structural basis of chromosomes. DNA (deoxyribonucleic acid) is actually information regarding how to create that particular cell's proteins.

Proteins are chains of amino acids linked together. It is the specific amino acids present and their sequence which gives the various tissues their unique functions. Proteins consumed in the diet are not the proteins that constitute the human body. Dietary protein is divided into amino acids, which in turn are utilized by the body as needed. This is the reason that amino acids are the essential nutrients and not protein itself.

Amino acids assist vitamins and minerals in performing their respective tasks. There are approximately 28 amino acids that combine to create the hundreds of different amino acids present in all living organisms. The liver produces approximately 80 per cent of these amino acids. The remainder, the essential amino acids, must be ingested in food or supplements. Eating a well-balanced diet is important if we are to ingest all the essential amino acids. Many things, however, can impair our absorption of amino acids, including infection, trauma, stress, prescription drugs and imbalances of other nutrients. It is essential that we consume an adequate amount of protein to avoid exacerbating other factors which may affect protein absorption and assimilation.

Three Essential Fatty Acids

Up until recently, fat was considered the enemy. I remember an infomercial on television featuring a well-known diet guru ranting and raving that "fat makes you fat" and "fat is the enemy." In the final analysis, he was only half right. The body requires fat as surely as it requires oxygen. There are a group of fats known as essential fatty acids (EFAs), which are not manufactured by the body (hence the moniker "essential"). Deficiencies of essential fatty acids have been attributed to poor skin and hair, high blood pressure and high cholesterol. Learning disabilities have also been attributed to children who are low in EFAs. This is not surprising because the four food groups and food pyramid are staggeringly low in EFAs.

Although there are three EFAs, there are only two basic categories. Omega-6 EFAs include linoleic and gamma-linolenic acids. Omega-3 EFAs include alpha-linolenic and eicosapentaenoic acid. The key to EFAs is balance. The diet of most North Americans is very low in EFAs, especially of the Omega-3 variety, because North Americans have followed the four food groups and food pyramid for nearly half a century. Experts studying this subject estimate that early in human history the ratio between Omega-3 and Omega-6 was 1:1. Currently, most North Americans consume 20 to 50 times more Omega-6 than Omega-3. In North America, most of us consume enough Omega-6 and Omega-9 EFAs in the foods we eat. Exceptionally good sources of Omega-3 are all cold-water fish, fish oil, flax seed, flax oil, hemp oil, hemp seed, and walnuts. EFAs can either be consumed in food or supplement form. Many studies have shown that EFAs protect against

heart disease. We have already seen that platelets or thrombocytes can aggregate and adhere to artery walls contributing to atherosclerosis. By preventing this adhesion, EFAs act as a blood thinner (*American Journal of Cardiology,* Volume 60, October 30, 1987). Harvard University and Johns Hopkins Medical School confirm that lack of EFAs are the central component in a family of conditions ranging from hyperactivity to schizophrenia, and include diabetes, asthma, allergies and thyroid disease (*Medical Post* April 29, 2003). A study in the *Journal of the American Medical Association* two years ago (2002) found that women who ate about four ounces of fish, two to four times per week, cut their risk of stroke by 48 per cent.

This is a very limited discussion of EFAs. It is a very complex subject and entire books have been written about the subject. My own personal experience with EFAs is quite interesting. You will recall that I perform the cell rupture test by actually bursting red blood cells. You will also recall that the type of fats consumed dictate how much pressure I will have to apply to be successful. When the red blood cells are stronger, the entire blood stream (and body, for that matter) is stronger. I have to apply a great deal of pressure to rupture the cells of someone who consumes adequate Omega-3. If the main fat source in the diet is from potato chips and snack cakes, the pressure needed to rupture the cells is dramatically less. I don't find it surprising that a myriad of studies conclude with the observation that EFAs, especially Omega-3s, are capable of reducing cardiovascular disease.

I would like to make one final point about Omega-3s. Recently, a new type of egg has appeared on grocery store shelves known as Omega-3 eggs. They have several times the Omega-3 of their ordinary counterparts. This is accomplished by feeding the chickens a diet high in Omega-3 usually in the form of flax seeds. If a chicken is fed an ordinary diet such as chicken feed, and the carcass of dead chickens (shockingly, this is quite common), the eggs have lower levels of Omega-3s. Humans can employ this same nutritional strategy to increase their own internal Omega-3s levels.

I trust that this chapter has given you some information on the host of essential nutrients that we have to ingest each and every day to achieve optimal health. The lack of minerals in the soils makes it difficult for even those eating a well-balanced diet to consume adequate amounts. Because minerals help in the absorption of other nutrients, even if you are consuming enough of the other nutrients, due to the

mineral problem you may not be absorbing them. However, there are many effective methods of compensating for the shortcomings of our food supply and I will handle them in detail in Part IV.

Chapter 7

The Acid-Alkaline Balance

It seems abundantly clear that each of the chapters in part III require an entire book or series of books to fully explain them in detail. The topic of acid-alkaline or PH balance is no different. Some well-respected members of the healing world believe that PH is the only factor in determining health. I personally believe that PH balance is a very substantial piece of the health puzzle, but to conclude that it is the only piece is to deny many truths about health and longevity.

PH balance is a very complex subject; and yet it can be distilled to a level of simplicity. Otto Warburg discovered the earliest connections between health and PH balance. Warburg was a doctor, chemist, professor and Nobel Prize winner. In 1931, Warburg won the Nobel Prize for discovering the nature and mode of action of the respiratory enzyme. This discovery opened up new approaches in the fields of cellular metabolism and cellular respiration. Among other things, Warburg proved that *cancerous cells could live and develop, even in the absence of oxygen*. This discovery will become more relevant as our discussion into PH balance and health unfolds.

PH is a measurement of how acid or alkaline a substance is. PH or *potential hydrogen* refers to hydrogen ion activity. Acids contain large amounts of hydrogen ions (H+). Alkaline substances contain a large proportion of hydroxyl ions (OH-). The PH scale is measured from 0 to 14. The scale is logarithmic, which means that small changes in numbers are much more substantial than they appear. A PH of nine is ten times more alkaline than a PH of eight. A PH of nine is 100 times more

alkaline that a PH of seven. A PH of one is almost pure acid, and a substance with a PH of one can make a hole in solid steel.

The average adult has approximately 45 litres of fluids in the body. All of the fluids in the body require a specific PH. Most of these fluids thrive only if they are slightly alkaline, with the exception of the fluid in the stomach, which should be acidic. In essence, the human body is a group of many cells held together by magnetic energy. All nerves send signals through electrical currents. Cells and organs require energy to operate and that energy is electricity. Because we are held together bio-magnetically, and because electricity is our main power source, human beings are actually electro-magnetic in nature. The energy in our body is delivered through a delicate balance in our biochemistry. That balance creates an environment conducive to energy generation and flow. Anything that affects that balance, affects our cells, affects our organs, and affects the entire electro-magnetic processes of our bodies. Excess acid in our bodies creates a biochemical breakdown.

North Americans are the most acidic people on the planet. No wonder North America leads the world in degenerative disease. Why are North American so acidic? The answer to this question is multi-faceted. Acid production by the body itself is the first source of acid. Metabolic acid is acid that the body produces simply by existing. One example of such metabolic acid is lactic acid, which is produced by physical activity. Every metabolic function produces acid from basic activities like walking and talking to more complex biological processes like turning food into blood, bones, muscles and tendons. Take for example eating. The most common by-product of food processing in the body is carbon dioxide. Lungs expel quite a large amount of carbon dioxide with every exhalation. The lungs do not have the capacity to expel all of the carbon dioxide and the human body relies on several compensatory systems. The carbon dioxide can combine with water, carbonic anhydrase, and zinc, creating carbonic acid which breaks down the toxin. The carbon dioxide can also combine with ammonia, effectively being converted into urea in the liver and then excreted by the kidneys. The point here is that the human body creates metabolic acid, but because PH balance is very important, it has numerous systems for maintaining that balance.

Metabolic acid is a type of acid that will be with us all the days of our lives. If that were the only acid the body had to contend with we would have very few problems. Adding to the metabolic acid is dietary

acid. The typical North American diet is almost pure acid; pizza, beer, hamburgers, hotdogs, bread, French fries, deep-fried foods, processed foods, preserved foods, rancid oils, carbonated beverages, coffee, sugar, artificial sweeteners, additives, preservatives and so on and so on. We shouldn't be surprised when we overdo it and our stomach begins to hurt, we reach for antacids by the truckload.

A third form of acid which proliferates in North America is the acid caused by prescription drugs. Ever wonder why drugs are swallowed and not chewed? Would it not be more convenient if we could chew our drugs rather than looking for water every time we had to take one? The reason drugs need to be swallowed is because they are bitter and that bitterness is because they are highly acidic.

The absolute quantity of acid the body has to contend with overloads the body's ability to deal with it. The first line of defence the body uses is a set of very complex systems known as alkaline buffers or the alkaline reserve. These buffers include substances such as malate, citrate, lactate, phospate and acetate. Once these alkaline reserves are all consumed, the body has no choice but to store acids. The favourite location that the body uses for acid storage is the *extracellular matrix*. Also known as the *mesenchyme* or the *interstitium*, these are the spaces around the cells. If the acids keep coming, these spaces will one day be filled to capacity. Then the acids will be pushed into the cells themselves and will displace potassium, magnesium and sodium. These are three very important minerals for health and their displacement will cause havoc.

When the cells have reached a high level of acidity, acid may begin to reach the bloodstream. This is the point where the body has no choice but to go into panic mode. A human being cannot survive very long if the PH of the blood is not maintained in a very narrow range. If the blood varies far from its ideal PH balance of 7.4 for any significant length of time, death will surely result. If the body detects excess acidity in the blood, it will reach for the most alkaline substance it knows, calcium. Calcium is actually taken from the bones to neutralize the acid in the blood. This is a condition known as free calcium excess. This leads to conditions such as osteoporosis and arthritis. Ever wonder why people get shorter as they get older? It is the result of the body stealing bone to counteract acid in the body, in general, and the bloodstream specifically (This is metaphorically accurate if not scientifically accurate).

Some of the research about PH is so new that many in the scientific or medical community are not familiar with it. One interesting bit on research has proven that after all alkaline reserves are used up and the body is forced to store acid in the tissues, it tends to be stored in areas of the body that are genetically weak. This has led many researchers to speculate that it isn't bad knees or heart disease that runs in the family, but rather it may be excess acid that runs in the family. Further health challenges that have been connected to acidity include:

- Colds, infections increase in frequency and severity as "stressed cells" are unable to remove toxins efficiently.
- Essential nutrients, such as vitamins and minerals are not assimilated as efficiently.
- Sleep is not as refreshing.
- Physical energy is depleted.
- Free radical oxidation is more severe.
- Friendly bacteria in the colon are destroyed, leading to increases in levels of unfriendly bacteria.

This is by no means an exhaustive list of the effects of poor acid-alkaline balance. Suffice to say that when the chemistry of the body is imbalanced, the entire mechanism is impaired.

As a person becomes more and more acidic, the body begins to store acids in the tissues. The body compensates for this acid by placing an alkaline molecule in the blood. This results in the blood turning more alkaline. Initially, this may sound like a good thing but the blood needs to be balanced; too much alkaline is as bad for the blood as too much acid. When the blood increases in alkalinity, it has the ability to increase its intake of oxygen. The blood can now maintain more oxygen, which initially sounds like an advantageous situation, but in reality nothing could be worse. In science there is an effect known as the *Bohr effect*. With rising blood alkalinity, the Bohr effect states, the red blood cells become increasingly saturated with oxygen. These oxygen-saturated cells begin having difficulty releasing oxygen. The tissues and organs become oxygen starved. And we began this chapter by citing the work of Otto Warburg who discovered that *cancer grows where there is no oxygen*. Sadly, very little research has been done regarding Warburg's discovery.

Testing PH Balance

Maintaining the PH balance of the body is absolutely crucial for health and longevity. Testing your own PH balance is a simple but poorly understood task. Many have relied on saliva and PH testing strips. It is very simple to receive an incorrect reading from saliva. Saliva varies quite intensely; for example, when you put food in your mouth, the mouth becomes full of amylase, an enzyme that the body uses to begin breaking down starches. This amylase immediately raises the PH of the saliva substantially. Urine is also often used to measure PH balance. Once again, urine can vary substantially from reading to reading. For example, if I had an alkaline meal this evening, say soup and salad, my urine would be more alkaline in the morning. If I had an acidic meal (pizza and beer), my urine would be very acidic in the morning to compensate (another one of the amazing compensatory systems of the body). The most accurate method of measuring PH balance I have run across is called the Saliva PH Acid Challenge. It has been reproduced as Appendix B. It is simple, accurate and because it takes seven days, it compensates for normal variation. I highly recommend everyone take the time and ascertain their PH levels. It will give you an excellent insight into exactly how much work you will have to do to return to PH balance.

Chapter 8

The Four Horsemen of the Nutritional Apocalypse

My clients will tell you that I do not preach. I believe in a philosophy of health rather than singling out specific activities as good or bad. I have noticed that the negative emotion and stress caused by the fear of eating animal flesh, or eggs, or fruit, often negates the positive effect of these abstentions. However, I consider four substances so toxic to humans that I refer to them as the Four Horsemen of the Nutritional Apocalypse. I believe, and a bevy of scientific evidence concurs, that we should not consume these substances in large amounts. These four substances are so severely entrenched in the North American diet that I think one would have to move to the moon to completely abstain. Another factor in my call for severe limitation of these substances rather than total abstention is because I do not want to cause any negative emotions if you attempt total abstention and periodically fall short.

Sugar

Sugar is a sweet, crystalline carbohydrate typically extracted from sugar cane and sugar beets. On packaging, it is known by many names including granulated sugar, powdered sugar, brown sugar, corn syrup, dextrose, raw sugar, and malt. Some health care professionals espouse the common belief that sugar in moderation is not all that bad. The reasoning usually offered is that sugar may have some bad attributes, but it is natural. So, if it is natural it must not be completely bad.

This is faulty on two key points. First, sugar is touted as a natural substance. In reality, sugar, as we usually consume it, is anything but a

natural substance. If we picked a sugar cane plant and chomped on all its components, including fibre, perhaps this argument would be valid. However, sugar is greatly processed. Part of the processing includes bleaching the sugar with chlorine. Chlorine bleach is a substance that many people are sensitive to. Chlorine can also combine with organic compounds and convert into dioxin, a lethal chemical.

For argument's sake, let us grant the sugar lobby its opinion that sugar is natural. To this, I usually answer that snake venom and monkey poo is natural and I don't plan on eating either of these substances any time soon. I usually receive roaring laughter when I use this line during presentations, but facetiousness aside, because a substance is natural doesn't automatically exalt it to "good for you" status.

Many studies have been conducted on how sugar affects the human body, and the evidence is irrefutable. In 1973, the *American Journal of Clinical Nutrition* published a study by A. Sanchez showing that ingesting 100 grams of simple sugar lowers white blood cell activity for at least five hours. In 1991, T.W. Jones et al. published an article called "Independent effects of youth and poor diabetes control on responses to hypoglycemia in children" (Diabetes, Volume 40, 1991, pages 358-63). These researchers found that sugar increases adrenalin, a stimulating hormone secreted by the adrenal glands. It was found that this adrenalin increase was far more pronounced in children, one reason which explains why children who eat the same amount of sugar as adults get more hyperactive.

These are two of dozens and dozens of studies which I reviewed about sugar. Suffice to say that the mainstream medical community has studied sugar. Here is a partial list of some of the negative effects that have been documented as either being caused by this natural sweetener or exacerbated by it:

- heart disease
- overweight
- diabetes
- hyperactivity
- ADD (Attention Deficit Disorder)
- increase in uric acid in blood
- kidney enlargement
- cancer
- hindered breakdown of dietary protein

- PMS
- yeast overgrowth
- muscle fatigue
- lethargy
- pallor
- cavities

The list goes on and on. Perhaps we would not see all these problems if people consumed moderate amounts of sugar. However, the reality is that the amounts of sugar consumed in North America is staggering. In 1900, the consumption of sugar was approximately half a pound per person per year. Currently, we consume half a pound of sugar per person per *day*. When I state this figure in my presentations I am usually met with fierce resistance. The conversation I have had many times goes something like this:

Client:I don't consume anywhere near a half a pound of sugar a day!

TA:How many cans of soda do you drink in a day?

Client:Three or four.

TA:Because the average soda has 10 teaspoons of sugar per can, you've already exceeded your half a pound and I haven't even gotten to the "frosted something" cereal, the breakfast pastry, the sugar in your coffee, the hidden sugar in your processed foods such as ketchup, which has 8 per cent more sugar than ice cream, the cupcakes, pies, the…

Client:I get the message but how did you know?

TA:Simple, statistics don't lie. As there are some people like me out there who don't eat any sugar, statistically there must be people eating more than half a pound per day.

Sugar is addictive. Some have compared sugar to drugs such as cocaine and nicotine. Many wonderful people are hooked and don't know it. Many people find quitting sugar a struggle. Those attempting to quit can suffer severe withdrawal symptoms. Chills, body aches, and headaches are some of the most common symptoms. If you are hooked, I recommend that you eliminate the sugar. The short-term pain will lead to an incredible feeling of well-being.

The negative effects of heavy sugar consumption have been intensified by the poor condition of our soils. Sugar cane is notorious for strip-mining the lion's share of chromium from the soils it is grown in. Crops planted near sugar cane are usually deficient in chromium even if

the soils are rich in chromium. In her infinite wisdom Mother Nature has made sure that sugar cane has plenty of chromium. Chromium is the main mineral used by the pancreas to make strong insulin. The insulin then helps the body cope with the extra sugar. Unfortunately humans don't have the same infinite wisdom. Humans process out the chromium and feed it to the pigs (who by the way, don't get diabetes). With the amount of sugar we consume and the poor amounts of chromium left in North America soils, little doubt remains why diabetes rates have risen from negligible amounts in 1900 to one in eight people today.

Sugar has found its way into so many items, even salt and cigarettes. This proliferation has not gone unnoticed by the World Health Organization. On April 23, 2003, the WHO published a report, "Diet, Nutrition and the Prevention of Chronic Disease." The report included a recommendation to the food and soft drink industry to reduce sugar by at least 10 per cent and caloric content by 25 per cent. As reported in the *Medical Post* (May 23, 2003), the Sugar Association's president, Andrew Briscoe, wrote a letter to the WHO Director-General threatening that the U.S. would curtail funding to the WHO if the WHO did not withdraw its report. The WHO made the threat public and did not back down. Bravo!

Carbonated Beverages

The addict feels faint. He needs his fix. He searches frantically for a source of the "stuff" he needs. He'll do anything; he'll pay any price. He finds it; now he can have his "fix." He consumes it and his energy returns. He'll be all right for a couple of hours. He'll be alert for the rest of the morning anyway.

This story isn't about a heroin addict and a syringe or an alcoholic and a brown paper bag. This is the story of an 11-year-old student roaming the halls of his school in search of a pop machine. Carbonated beverages are toxic for the human body. The most toxic aspect of carbonated beverages is that they usually teem with sugar. As we have already devoted substantial attention to the evils of sugar, I will turn the focus to the myriad of other toxic substances in carbonated beverages.

With the possible exception of water, every ingredient in carbonated beverages is toxic to the human body. By examining each of these ingredients separately, we can understand why carbonated beverages are such a toxic brew.

Carbonation is accomplished by pumping carbon dioxide into water or other liquid. From chapter 7 on PH balance, you will recall that carbon dioxide is a waste product of food metabolism. The body has a difficult time breathing out all the carbon dioxide it produces and relies on several back-up systems to accomplish complete purging of carbon dioxide. So why would anyone in his or her right mind want to add more carbon dioxide into the system? Carbonated liquids further burden the system by weakening stomach acid, thereby interfering with proper digestion.

Some soft drink manufacturers have attempted to sell soft drinks to calorie-conscious consumers by replacing the sugar with artificial sweeteners. When people ask me which is better – consuming large amounts of sugar or large amounts of Aspartame® – I usually respond by asking, "What would you rather be shot by, a 38-calibre or 45-calibre gun?" Aspartame® is a low calorie artificial sweetener that lowers metabolism. This means that you save 100 calories on the soft drink, but the 400-calorie hamburger you eat with your drink, acts like an 800-calorie hamburger in your system. The net result is your body acts as if it consumed 300 more calories. You'd have better luck putting out a fire with kerosene. This is one of the most brutal deceptions ever inflicted on the unwitting dieter. Aspartame® has also been linked to convulsions, depression, insomnia, irritability, weakness, dizziness, migraine headaches, mood changes, and mental retardation.

Many carbonated beverages also contain food colourings such as Amaranth (red), Bordeaux (brown), Orange 1 (yellow), Carmel colour and Ponceau (scarlet). All of these dyes are unfit for human consumption. Excessive consumption of food dye has been connected to many ailments including ADD (Attention Deficient Disorder) and ADHD (Attention Deficit Hyperactive Disorder) in children. Dr. N.M. Walker in his book, *Water Can Undermine Your Health*, states, "Supposing your knew that soft drinks could cause your brain to *disintegrate* (author's italics), would you drink them? More than a million children today are afflicted with cerebral lesions and other afflictions caused by soft drinks!"

Many carbonated beverages, especially the colas, include as an ingredient a most hideous substance known as phosphoric acid. Phosphoric acid is created by treating phosphorus with sulphuric acid (yummy) and causes the soft drink to bubble and fizz. This bubbling and fizzing can actually burn your insides. Phosphoric acid also upsets the body's delicate phosphorus-calcium balance. This imbalance can

eventually lead to osteoporosis, a weakening of the skeletal structure. After reading Chapter 7, the very word *acid* in phosphoric acid should have you dumping any colas directly down the drain but I would advise against it. That would be wasting your money. Instead, I recommend you use the colas to clean your toilet or silverware; you won't believe what a shine you will get. In 1994, *The Journal of Adolescent Health* published a study concluding there was a "strong association between cola beverage consumption and bone fractures in girls." Another study, published in *Pediatrics and Adolescent Medicine* in June of 2000 confirmed this finding. This latter study concluded that the consumption of cola beverages were "highly associated with bone fractures." Colas are disintegrating the bones of our youth.

These are only some of the more offensive substances found in carbonated beverages. We have not even touched upon the dehydrating effect of carbonated beverages. The carbonated beverage industry is huge and they wield strong political and economic power. In 1980, the United States Department of Agriculture attempted to limit the sale of soft drinks and other junk food in schools. The USDA adopted a regulation that prohibited the sale of soft drinks and other junk food before the last lunch hour ended. In 1984, the National Soft Drink Association countered this regulation by filing suit. A United States Federal Appeals Court sided with the association and ruled that the USDA did not have the authority to ban competitive foods. It is obvious that our governments cannot protect us from the ravages of carbonated beverages.

The American Medical Association has known about the dangers of carbonated beverages since 1942. The AMA's Council on Food and Nutrition made this statement in 1942, "From the health point of view, it is desirable especially to have restriction of such use of sugar as is represented by consumption of sweetened carbonated beverages and forms of candy, which are of low nutritional value. The Council believes it would be in the interest of the public health for all practical means to be taken to limit consumption of sugar in any form in which it fails to be combined with significant proportions of other foods of high nutritive quality." The AMA knows that carbonated beverages are unhealthy and so does the government. Unfortunately, they cannot seem to help us. The government tried and failed in 1980. If you are a parent and your children's school has more pop machines than water fountains, it is up to you and other parents to *demand* they be removed.

White Flour

The tragic treatment wheat has received in the past fifty years is unparalleled in the history of agriculture. Wheat and other grains provide approximately 70 per cent of the food energy consumed in North America. More and more people are diagnosed as having a wheat allergy. This allergy might be caused by the genetic modifications that wheat has been forced to endure. Still others are intolerant to the gluten in wheat. Gluten, a sticky protein found in wheat and other grains, may be harmful to sensitive individuals. Gluten intolerance is also referred to as celiac disease. The disease is thought to be a due to a deficiency of enzyme in the mucosal cell, a defect in immunity, or a defect in the mucosal cell membrane. Gliadin, a component of the protein gluten, causes atrophy of the villi that line the intestine, and also causes abnormal growth of the mucosal glands.

Whole wheat can certainly cause problems and I recommend that it be used in limited quantities. I also recommend that all of my clients try some of the breads and other products that are made from the ancient grains. These grains include spelt, kamut, amaranth and quinoa. They are quite tasty and usually well tolerated by those with wheat allergies. Those that have celiac disease must be extra cautious when trying all grain products. Unprocessed, whole-wheat products may qualify as part of a healthy eating regime. White flour, the mutilated result of processing, barely qualifies as food. Wheat can have up to 11 known vitamins, essential fatty acids, and *if* grown in mineral rich soils (always the eternal optimist), six or so minerals. The processing of wheat removes all these components. The processors then return four vitamins and one mineral, and this lifeless powder is referred to as *ENRICHED FLOUR.*

Enriched flour had its beginnings during the Second World War. The invention of the Roller Mill spelled the beginning of the end for whole wheat. The roller ripper, as I like to call it, enabled the miller to separate the three main parts of the kernel – the outer layer or the bran, which is where the B vitamins and minerals reside; the germ, which houses the essential fatty acids and Vitamin E, and the endosperm or starch. The United States government, blinded by wartime scarcity and dubious assurances from nutritional experts, proceeded with plans to promote white flour, much to the chagrin of knowledgeable nutrition experts. *Nutrition Reviews* was quite dismayed at the United States government's plan to go ahead with this nutritional folly and wrote, "It is a curious fact that enrichment of white flour and white bread was

promulgated with little direct experimental evidence to demonstrate the value of such a proposal to the human being." This was very advanced nutritional thinking for 1943.

White flour has been stripped of the bran, the germ, the vitamins, the minerals and the essential fatty acids. If the story ended here, perhaps white flour would not have made it as one of the four horsemen. The chemical industry reared its ugly head and assisted mass production bakers with one key element; uniformity. Chlorine, a potent toxin and carcinogen, was employed to remove the yellowish pigments in the flour. Sadly, the yellowish pigments are actually carotene, which the liver converts into Vitamin A. The chlorine also reacts with the gluten to make an elastic dough; the greater elasticity holds carbon dioxide produced by the yeast. Some of the other chemicals used to make white flour include: aluminum chloride, azocarbonamide, benzoyl peroxide, calcium propionate, calcium sulfate, chlorine dioxide, nitrogen dioxide, potassium bromate, and potassium iodate. These aren't products you would find in most pantries.

I will grant that the amount of these chemicals in white flour is nominal. My concern is that these are highly aggressive chemicals. They most certainly interact with other natural ingredients in the heating process. The effects of these interactions and their byproducts have never been investigated.

Perhaps the previous paragraph is too alarmist. If wheat only constituted a minute part of the North America diet then I would reconsider my position. The wheat lobby is very influential and makes sure that wheat remains an integral part of the four food groups and the food pyramid. We eat so much of it that trace amounts of poisons are not so trace anymore. White flour is a substance stripped of all its goodness and then, to add insult to injury, bathed in a chemical nightmare. What good can come of that?

Trans Fats

This section received more editing in the final draft of my book than any other. Although the scientific community has known about trans fats for more than forty years, they have received more publicity in the last year than in the other 39 combined. I originally wrote that the inclusion of trans fats in the four horsemen was probably the most contentious selection. Now I am not so sure. I can assure you that in North America, where we consume so many substances I consider to be non food, trans fats are the crème de la crème.

Trans fats are mainly contained in margarines, and commercial cooking oils. Liquid oils are subjected to a process known as hydrogenation. During hydrogenation, several hydrogen atoms are thrust upon each molecule of oil. A catalyst such as nickel or platinum is used for this process to make the oil solid and reduce the tendency of oils to go rancid. Hydrogenating oils also improve spreadability and "mouth feel." Mouth feel and spreadability is enhanced and all that is sacrificed is *safety*. Randomly adding hydrogen atoms to polyunsaturated fats converts natural components found in the food into other compounds, some of which have never been encountered before. Some of these new compounds are trans fats. Fatty acids are the building blocks of fats in the human body.

The irony of ironies in the health industry is the popularity of margarine. Margarine has taken up 90 per cent of the shelf space allotted for spreads, leaving very little room for butter in grocery stores. Margarine sales went up as margarine was touted as the heart disease saviour. Margarine companies donate extensively to heart research (the same heart disease they actually cause). Many cities have annual charity events for heart disease fund-raising sponsored by none other than the margarine purveyors. Don't be fooled by margarines that are labelled *trans fat free*. You cannot take the trans fats out of margarine because trans fat is not in margarine; margarine *is* trans fat. Don't let the margarine mongers get away with that one. The only other instance that resembles this bit of foolishness is when a well-known restaurant chain created a boneless rib sandwich. I'd love to see a boneless rib. Margarine is "plastic butter." This is a valid description because under the microscope, a world I am all too familiar with, a hydrogenated fat molecule looks like a plastic molecule. In case you think I have been too harsh on margarine I would like to quote famous health writer John Finnegan who states "(margarine is) lifeless, devitalized poison, packed with carcinogens, fit only for lubricating the front wheel bearings of your car."

The science behind the detrimental effects of trans fats is quite complicated. Trans means "on the other side" which is what transpires between hydrogen atoms on the fatty acid molecule. The hydrogen atoms flip to the other side of the molecule, resulting in a change in physical condition. This change leads to a change in structural integrity in human cells, which in turn affects the cell's ability to regulate what goes in and what comes out. Other components that are affected in-

clude protein molecules that exist on the molecule. These proteins are known as receptor molecules which receive chemical neurotransmitters that neurons use for communication. There are many books written about trans fats, and if you are analytical, you may want to read one or two of them. For the purposes of our discussion, it will be sufficient to state that trans fats are unnatural; trans fats are dangerous, and more and more research is being presented daily verifying this. Some of the harmful effects verified through study include interference with normal function of essential fatty acids, interference with pregnancy, lower quality of breast milk, decreased insulin response, decreased testosterone and sperm potency, increased risk of heart disease, and increased risk of cancer. Dutch researchers reported in *Journal Arteriosclerosis, Thrombosis and Vascular Biology* in the July 2001 issue that just one month of eating margarine reduces normal flexibility in arteries by one third. A study by Harvard University established a link between vegetable fats used in deep fryers and increased risk of heart disease (March 5, 1993, page A10). These are only two of a myriad of studies that unequivocally brand trans fats as toxic. The studies I have seen date back to 1958, when Dr. Ancel Keys first warned about the dangers of trans fats. Some of the other well-respected doctors that have arrived at the same conclusion since include: Dr. Fred Kummerow, University of Illinois; Dr. George Mann, Vanderbilt University; Dr. Ed Pinckney, American Medical Association, and Dr. Mary Enig, PhD.

Trans fats are the absolute worst of the worst. They are quite prevalent in processed foods and as such would be almost impossible to eradicate from the North American diet. All I ask is that you do not add to it by consuming large amounts of margarine in addition to processed foods. Your best bet is to go to your fridge immediately, box up any margarine you have in there and mail it to some terrorist organization. Let them spread it on their toast (white flour, I hope), muffins (loaded with sugar) and hopefully they'll wash it down with loads of cola. If the four horsemen ride there, humanity may actually benefit.

Voices such as mine that have been silenced by the screams of the mainstream (but my doctor says margarine is better for me than butter) are finally being heard. New labelling in the United States and Canada will finally begin revealing the hidden trans fats in food. The FDA has estimated that simply revealing these fats will save 2,000 to 5,000 lives annually in the United States alone. I applaud my fellow pioneers; this goes to show that the mainstream scientific community can be taught.

PART IV

THE SOLUTIONS

Chapter 9

Cartoon Supplements

One person that I truly respect and admire is Walt Disney. Through the strength of his imagination he created cartoon characters that are still entertaining children and adults alike more than thirty-five years after his death. But Mickey isn't really a mouse and Donald isn't really a duck. If you strip away the façade that is modern animation, in essence they are fakes.

Supplement companies have learned a valuable lesson from cartoonists like Walt Disney and paradoxically, rather than earning my respect and admiration, they have earned my contempt. I believe so far this book has made a convincing argument that our poor soils and poor food supply has made supplementation imperative for all those that are interested in health. I have to make a crucial point at this juncture. Taking a poor supplement is worse than taking none at all. Without a doubt these are the most important 11 words in this entire book.

Nutritional books seldom mention the differences in quality between various supplements. This lack might be from ignorance or from an intention of not rocking the boat. My intention is not to merely rock the boat; I intend to tip it right over.

First I will expose some of the more common shenanigans perpetrated on the unknowing supplement buying consumer. I call these my Top Four Gruesome Tactics of the Cartoon Supplement Mongers. The first tactic that these manufacturers employ is related to active ingredients. Here the manufacturers use the clandestine nature of supplements as a shield. Most supplement purchasers are not chemists and even

those purchasers who are chemists do not generally analyse their supplements before taking them. When a label says 10,000 I.U.s of beta carotene how do you know that the pill actually contains this amount? Unless you get each pill analysed, you will never know exactly what you are getting. The cartoon supplement manufacturers realize this detail and use it to their advantage.

The June 2002 issue of the *Medical Post* featured a most disturbing article entitled, "Supplements way off on active ingredient amounts." Dr. Laurence Klotz, a professor of surgery at the prestigious University of Toronto and Chief of Urology at Sunnybrook Medical Centre made a startling discovery. He and his colleagues purchased 13 supplements at random in a health food store. The actual concentrations of the nutrients claimed on the label were generally low; one preparation contained only 3 per cent of the amount stated on the label. How would you like to purchase a calcium supplement and be promised 2,000 milligrams of calcium and only receive 3 per cent or 60 milligrams? With calcium supplements such as these on the market, it comes as no surprise that we lead the world in degenerative bone disease. The occasions where the manufacturers are caught constitute a small percentage of the actual times they put in less than the full amount.

Labelling laws for supplement manufacturers are lax because preparations are usually manufactured in large vats and uniformity in every pill is next to unachievable. However, a few notable contraventions have occurred recently. In one case, a company had to recall a maternity supplement when it was discovered that only one third of the folic acid listed on the label was actually present. Low levels of folic acid have been associated with increased risks of certain birth defects and the Food and Drug Administration was not amused. FDA Commissioner Mark McClellan conducted private lab tests and found that 18 other products had only 50 per cent to 80 per cent of what the label stated (FDA to Demand Supplement Makers Vouch for Contents, Reuters, March 7, 2003,).

The second gruesome tactic employed by the cartoon supplement manufacturers is ineffective blending of ingredients. Essential nutrients do not work in isolation within the body. Nutrients are like an orchestra which can make music that the instruments cannot possible recreate individually. Orchestras, like supplements, require correct ratios for effectiveness. An orchestra made up exclusively of tubas would at best sound unusual. Many of us know that we need magnesium for proper calcium absorption, but this is only one of many interactions. A quality

supplement manufacturer will ensure proper ratios of nutrients for maximum effectiveness. A cartoon supplement manufacturer will not be as diligent.

The motivation for ineffective blending is greed. Vitamin B12 is the most expensive of the B group of vitamins. Because the B group of vitamins work synergistically, a correct ratio of each B vitamin is of paramount importance. Since B12 costs the most, it is usually the one in lower than optimal quantities. This imbalance not only effects B12 levels, but also affects the utilization of the other B vitamins.

The third gruesome tactic used by the cartoon supplement manufactures is aptly referred to as dirty tricks. Until this point, we could attribute the tactics used to poor manufacturing or poor regulation. In the dirty tricks department, we will see various forms of dishonesty. A news story heralding a health discovery makes the banner headline in many newspapers. It reads something like "100 milligrams per day of alpha-lipoic acid reduces risk of heart disease." A few weeks later while at the local pharmacy you notice that the multi-vitamin is new and improved. It now has alpha-lipoic acid. You remember the news headline and purchase a bottle. You take it home and notice that there is 100 *micrograms* of alpha-lipoic acid and because the number 100 rings a bell, you are pleased with your purchase. In reality you've just fallen for a dirty trick. You need one thousand times *more* alpha-lipoic acid to get the benefits because 100 micrograms is one thousand times *less* than the 100 milligrams you thought you had. This scenario happens so often that it is revolting. In recent months, I have personally seen this happen with saw palmetto (prostate protection) and lutein (vision improvement). Dirty tricks indeed.

The fourth and final gruesome tactic of the cartoon supplement manufacturers is the use of questionable manufacturing techniques. All supplements require binders and excipients. Binders hold the pills together and excipients help them to pop out of the mould. The long list of toxic excipients used by the poor manufacturers rivals the witch's brew manufactured by cola companies. Some of the more repugnant substances used include: shampoo, sand, cork, carnauba wax, talc, polyethylene glycol (anti-freeze), sodium benzoate, dextrose, various chemical dyes, glue, shellac, and corn starch. These ingredients are far less expensive than their inert and innocuous counterparts. The noxious ingredients have the ability to turn a potentially good product into a hazard. A sure giveaway is when a company lists the ingredients not in the pill. For example a label might state no sugar, no wheat, no corn,

but it doesn't state no shampoo or no cork. Please don't tell me what isn't in the pill, tell me what is!

People like convenience. They like the concept of one pill per day for all their supplementation needs. Cartoon supplement manufacturers are shrewdly aware of this and quick to oblige. They are quite content to jam all the nutrients in one easy to take pill. To compress the pill enough, they usually have to apply hundreds of pounds of pressure. Cheap binders and this exorbitant pressure combine to create a block of cement. *The Journal of Chiropractic Economics* reported that 250,000 pounds of undigested multi-mineral and vitamin tablets and pills are pulled out of the Seattle, Washington sewage filters *every six weeks* – many of them with the brand names still readable. If you know anyone who has lost their colon and must rely on a colostomy sack, ask them what the most annoying problem is and they will usually tell you it is removing whole pills.

Two of my favourite people in the whole world are Greg and Cheryl Storring. They live about two hours from Toronto in the small town of Tamworth, Ontario. Cheryl is in the health business and has a warmth and compassion about her I find almost intoxicating. Greg has one of the best senses of humour I have ever run across. Greg owns Storring Septic Service and has been emptying septic tanks professionally for over 30 years. Greg has an unusual hobby. He collects supplements that people have swallowed. He finds these supplements floating in septic tanks. My favourite line of his is, "if you want a good supplement see Cheryl, if you want a slightly used one, get it from me. And if you are on my route, I'll sell it back to you in a month or so."

"Potty Pellets" (Figure 18)

That story is both humorous and sad. People never believe me when I tell that story, so years ago I asked Greg to part with some of his collection. Since then, I have been carrying a bag of slightly used "potty pellets" as Greg calls them, to every microscopy session. I call it my bag of humble pie. I have motivated more people to stop using cartoon supplements with that bag than I have with all my years of experience, knowledge and training. Humble pie, indeed! I have asked Greg to temporarily part with some of his collection and reproduced it for your viewing pleasure (Figure 18).

By now, you may realize that buying supplements and getting value and avoiding being poisoned is not as easy as you thought. Fortunately I have developed three rules to follow that will help you make an effective choice. The first rule is never buy supplements in a pharmacy. Pharmacies carry a higher percentage of cartoon supplements than any other purveyor of supplements (Note to pharmacists: please do not be offended by this; I have a great deal of respect for you and your profession, but the facts are the facts).

Now that we no longer purchase supplements in pharmacies, we will buy them elsewhere. There are many options for purchasing supplements. You can purchase them from a health food store, from your health care professional such as a naturopath or homeopath, your neighbour, if they distribute supplements, or even yourself, if you become associated with a direct selling company. All of these options are merely distributions channels. None of these choices inherently guarantees you a quality supplement.

The second rule for increasing your odds of obtaining a quality supplement is by performing the "Dissolution and Disintegration Test."

DDT is an appropriate acronym for this test because the DDT is deadly for cartoon supplements. In 1993, the United States Pharmacopoeia set standards for vitamins including disintegration and dissolution. DDT testing at the USP is a complicated procedure which involves using specific chemicals and high technology machines. You can recreate this test quite nicely at home using a glass of vinegar. The methodology is quite simple. Take a supplement in tablet form (This test is not for capsules) and drop it in white vinegar (acetic acid five per cent) for 30 minutes. At the end of the 30 minutes you should have a fine powder at the bottom of the glass. There should be no blobs that look like shampoo (If there is, guess what one of the binders probably was?). In some cases after many hours (my personal record is 26) the

pill looks exactly the same (That's another one to add to Greg's collection).

If you call a cartoon supplement company and ask them why its supplement failed the DDT, be prepared for its wrath. The company will tell you that a glass of vinegar cannot possible recreate the stomach. The company will insist that the stomach has heat, enzymes, churning and other complex processes that you cannot possible replicate with something as simple as a glass of vinegar. Of course they are right that a glass of vinegar cannot possibly mimic the human stomach exactly. However, why is it that the same brands that fail the DDT are the most prevalent ones in Greg's collection? Hmmm. I think they know we're on to them and they don't like it.

Of course I have not mentioned that having live cell microscopy sessions performed over time will give you an accurate reporting of whether your supplement is working for you. Another method of taking the guesswork out of supplements is to purchase only pharmaceutical grade varieties. It is ironic that rule number three is to purchase pharmaceutical grade and pharmacies don't seem to carry them. There are two standards by which supplement companies' can produce their wares. They can follow FDA guidelines and produce a food grade supplement. Or they can choose to exceed these minimum standards and produce their supplements according to the conventions set by the USP and create a product based on pharmaceutical standards. Most of the 400 or so companies in North America that produce supplements choose to adhere to the more lax standard of food grade.

The difference between food grade and pharmaceutical grade is immense. Food grade supplements can contain a wide list of binders and fillers; some of them we mentioned previously. To maintain food grade supplement manufacturers cannot hold the pill together with nuclear waste or rat poison, but they can hold it together with petroleum products, coal tar derivatives, shampoo, sand and so on. Pharmaceutical grade products can only use binders and excipients that are inert and innocuous; there is a very short list of quality and pricey ingredients.

Food grade supplements have less purity and quality requirements. The FDA does not monitor the contents of supplements or the source of the nutritional ingredient. This means the finished product may not be potent enough. Manufacturers can use extracts that do not have enough or any, active ingredients. They are allowed to use powdered forms even though study after study shows that extracts are better utilized by the human body. For example, ginkgo biloba has been touted as an

amazing product for mental clarity. A 60 mg. dosage is usually the amount included in a supplement. 60 mgs. of the highest quality extract will have the desired effect. To get the same potency from ginkgo leaf powder you would have to consume 50 times as much.

Pharmaceutical grade requirements for purity and potency are much more stringent. The product must be in excess of 99 per cent pure. On-site laboratory facilities must continuously monitor the output to ensure the highest quality finished product. State of the art testing equipment must be used, including High Performance Liquid Chromatography (HPLC), Inductively Coupled Plasma Emission Spectrophotometry (ICP), Dissolution and Absorption, Microbiological Testing, and Fourier Transform Near Infrared Spectroscopy (FT-NIR). All raw materials must be tested to ensure they are free of pesticides, herbicides and heavy metal contamination. All raw materials must be examined for weight, ingredient homogeneity, colour standardization and content levels.

The above lists only some of the rigorous requirements demanded in the pharmaceutical grade product. Because of the strict procedures, many companies prefer the simplicity and increased profits of maintaining lower levels of quality. They chose to "lower the bar" at the expense of your health. Perhaps now you can understand why I insist on pharmaceutical grade for my family's supplementation. In a time where proper supplementation is absolutely essential, I find it saddening that most companies care more about their bottom line than they do about making a health-enhancing product.

To conclude, I would like to reiterate: Part of the solution to our health challenges is to supplement every day for each of the 92 essential nutrients. Quality of supplementation is the most important aspect. Taking a poor supplement is worse than taking none at all. Not only do you get a false sense of security that you are ingesting the essential nutrients lacking in your diet but often you are also toxifying yourself with the potpourri of noxious substances found in cartoon supplements. If you do the vinegar test and your supplement fails miserably, do not be afraid to return it for a full refund. If the seller won't take it back on the strength of your word then a trust issue exists between you and the seller. I don't know about you, but I wouldn't buy anything this important from someone I had trust issues with.

Chapter 10

The Power of Water

"Drinking eight to 10 glasses of good, clean water will do more for your health than just about anything else," Ted Aloisio, Director Veritas Health Institute.

Every one the 10,000 people who have a blood assessment performed by me receive a recommendations sheet with that quotation featured prominently. I firmly believe it and have personally witnessed much evidence validating it. Take for instance the case of Thomas (not his real name). Several years ago Thomas came to me and complained about many health challenges. One of the questions I asked him was, "How well hydrated are you?" He replied, "I'm well hydrated, I consume at least seven cans of cola per day." After I regained my composure I asked, "What about water?" He replied, "I never touch the stuff! Plus there's water in cola, right?" After I regained my composure for a second time, I designed quite an extensive nutritional program. At this point he informed me that he had been unemployed for quite a while and was not in a financial position to participate. I then switched to plan B. I recommended that Thomas begin drinking three litres of good, clean water every day. I also informed him that he could drink as much cola as he wanted but only after he consumed the three litres of water. He agreed to follow my instructions and we set an appointment for three months in the future. (My work with children has taught me that the sugar and caffeine in colas is addictive and asking someone to quit colas completely usually torpedoes the plan before it can get started). After three months he returned and I could hardly recognize him. His skin cleared up; he had a smile on his face, and a renewed

vigour that was most impressive. Many of his health challenges were gone or greatly diminished. His desire for cola lessened with every passing day and he hadn't had any for two months. His new confidence helped him to secure employment. He now had the resources to begin a nutritional program. And the rest as they say is history.

Over the years, Thomas has referred many clients to me. Each of them usually begin the session by saying something like, "You're a miracle worker; I can't believe the change in Thomas." I usually reply, "Thomas deserves the credit; he persevered where many wouldn't have had the fortitude to continue." His story is not an isolated incidence. It is certainly one of the more dramatic transformations created by water, but I have countless others.

Not a day goes by without someone asking me about whether water is important. The answer is an unequivocal yes. The quotation at the beginning of this chapter makes reference to both quality and quantity of water. Each is equally important. Quantity is important for obvious reasons. The human body is composed of over 70 per cent water. Not 70 per cent cola, not 70 per cent coffee, not 70 per cent apple juice, not even 70 per cent herbal tea. Maintaining the water in the body is difficult because we deplete water in many ways. Water is lost by sweating and in elimination. Most of the water removed from the body goes through the kidneys. Adding to this drain are small amounts that disappear through evaporation, tearing, and breathing. The total loss of water that an average human suffers in a 24-hour day is the equivalent of six, eight-ounce glasses. If you add other dehydrating factors such as a hot climate or workplace, consuming dehydrating beverages (for example coffee or soft drinks), the need for water can increase substantially.

The following exemplifies where the human body's compensatory system is both a blessing and a curse. From my experience most people are "borderline dehydrated." The body's sense of thirst is tricked into satiety; you don't feel thirsty even though you are. The body then places itself in "starvation mode." The foremost authority on water and health is Dr. F. Batmanghelidj. His book, *Your Body's Many Cries For Water* is an essential read for anyone interested in good health. I have shared the stage with Dr. Batman, as he is affectionately known, and I found him to be one of the most intense and driven people I have ever met. In the late 1970s, Dr. Batman was confined to an Iranian prison. He had very little medicine at his disposal and lots of sickness occurred in the prison. He used the only "medicine" at his disposal – water. He

began to notice great improvements in just about every condition he treated. Water repaired so many ulcers that I think "drink water" should be the first thing out of any doctor's mouth when treating a patient with ulcers. His startling success is even more impressive considering that he used Iranian prison water, which I assume isn't the most pristine of waters.

Dr. Batman claims that the body goes into "drought management." A very complex rationing and redistribution system insures that more important cells get water while other cells are restricted. The body begins closing capillary beds which can lead to circulation issues. These actions are only the beginning. Some of the other reported symptoms of dehydration include: blurred vision, headaches, overall weakness, dry skin, dizziness, rapid pulse, shortness of breath, ulcers, constipation, joint pain, sinus problems, sleep disorders, depression, impotence and several others. Dr. Batman is convinced that the medical establishment has treated dehydration with drugs and surgery for years. His mission is to promote the consumption of water for health and I wish him all the success in the world. He has come up against severe opposition, which a less resilient man might not have been able to withstand.

How much water should we consume each day? The easiest signal to look for is colour and odour of urine. If your urine is dark yellow and has a foul odour, you did not drink enough water. The kidneys concentrated the waste residue in a smaller amount of water. The only exception to this is morning urine which can be slightly darker even if you are well hydrated. As a general rule, I usually recommend that clients consume half an ounce of water per pound of body weight as a minimum. Consumption of dehydrating liquids, such as alcohol or coffee, living in a hot climate or sweating excessively increase the minimum requirement of water necessary. Always err on the side of too much water.

I would like to relay a warning that I give to all my clients. If you haven't consumed water on a regular basis for many years, do not immediately begin to drink a large amount of water. Your body is accustomed to dehydration and to introduce that much water all at once may confuse the body and you could feel as if you consumed the entire contents of an Olympic-size swimming pool. Introduce the water gradually, and give the body a chance to adapt. Also, if you believe that you cannot possible drink all the water I have recommended, there is an answer. On day one, drink one glass of water. On day two, drink two.

Continue this pattern every day until you cannot drink any more. If you peak at nine, that's better than eight. If you peak at five, that's better than four. Many of my clients, some of whom never drank water consistently before, comment on how easy it is after they get used to it. They also thank me for the incredible improvement in health that this simple change has made.

Quality of water has received recent interest in the public eye. Most people consume one of the three common types of water – municipally treated, well water and bottled water. Each of these three types of water has advantages and disadvantages. Municipal water is filtered to remove clay and other organic debris. It is analysed, tested and treated to ensure that it is "safe" to drink. By safe, I am not referring to long-range ramifications, but immediate ones. Of course, there have been exceptions. In 1993, over 400,000 people were sickened in Milwaukee when cryptosporidium, a parasite, managed to invade the water supply. In May 2000, in Walkerton, Ontario, seven people died and over 2,000 others were sickened by E. coli bacteria.

Depending on where you live, your "safe" municipal drinking water can have traces of lead, arsenic, asbestos, benzene, mercury, nitrates, radium, nitrites, sulfates, PCBs, radon, coliform bacteria, and over 70 other contaminants. Furthermore, chlorine is added to water to kill bacteria. The dead body of the bacteria, as well as the chlorine remain in the water. Chlorine is a toxic substance that has been linked to cancer, heart disease and stroke. Chlorine is a substance that kills unicell life forms. A human being is composed of billions of unicells held together magically. Is it wise to habitually consume a substance that kills unicells? Chlorine can combine with organic materials in the water and form unwanted by-products. Fluoride is also a controversial substance added by many municipalities. Fluoride may be a carcinogen as well as a leach on calcium from human bones. Many municipalities are eliminating fluoride or reducing its use substantially. In the test that water must be good and clean for optimum benefit, municipal water fails on both criteria. I would not recommend the consumption of municipally treated water. When it comes directly out of your tap it is not quite ready for human consumption.

The second option for drinking water is well water. Well water services approximately 16 per cent of the population in North America. The responsibility for safe well water is a completely private one. Wells are not regulated; not federally and not locally. You can certainly

take safeguards to increase your chances of maintaining the best possible water. You must test frequently, at least once every six months. Of course, if the water has a strange taste, smell or your family has an unexplained illness, the water should be tested immediately. When it comes to whether well water is good and clean the answer is "maybe." Certainly well water is less likely to contain chlorine and fluoride. However as every well is different, this type of water cannot be generally declared good or bad.

The final type of water is bottled water. Sales have never been stronger. In 2002, almost six billion gallons of bottled water were consumed in the United States. Americans paid $7.7 Billion for bottled water in 2002. Those same people who complain about $2 for a gallon of gasoline do not seem to complain about paying more than twice that for something they could get almost for free. Bottled water has the potential of being better than municipally treated water. There is no chlorine, no bad odour and no bad tastes, with the possible exception of a slight smell from the polymers leaching from the plastic containers.

Bottled water may be sold as pristine, but in reality it is processed water. Many opportunities have arisen for contaminations. Two recent headlines are a testament to that. *USA Today* ran an article entitled "Bottled Water No Safer Than Tap" and the *Los Angeles Times* ran an article entitled "Studies Find Impurities in Bottled Water." In the United States, organizations such as the FDA are supposed to carry out inspections, but an inspection every five or six years does not garner my confidence.

I do not want to brand all bottled water as being contaminated. I'm sure some of it is pretty good. There are inherent problems with relying on bottled water. It is usually bulky and difficult to transport. Because it is expensive it will not be used as often as it should. For instance, around the home it is essential that clean water be used for many purposes that the expense of bottled water would render prohibitive. Water for boiling rice or pasta, for tea and coffee, and for washing vegetables, should be as clean as possible. I cannot see many consumers emptying several containers of bottled water to soak lettuce. This explains why in Walkerton, even citizens who drank only bottled water, were affected by the E. coli outbreak.

If the three types of water are all questionable, what is the best type of water to consume? In my opinion the best approach is to use a good quality water filtration system which you control. The key here is that

you control the quality of the filter; you control the maintenance including the changing of the filters, and so on. With the myriad of water filtration systems available, many people are confused as to which is the best. I hope to give you some independent and crucial information that you may find useful in making your final decision.

The three main types of home filtration systems are distillers, reverse osmosis machines and ordinary filtration devices. Distillers employ a system of thermal separation and evaporation. Water is heated to produce stream. The steam is then cooled and condensed into the final product. People partial to distilled water will tell you that sediment, pathogens, chemicals and dissolved solids are removed during separation. However, the distilling process has drawbacks. One drawback is that certain contaminants, such as chloroform and organic materials, have a lower boiling point than water. This means that they can vaporize into the finished product. Distillers also require a holding tank which may get contaminated over time. The biggest drawback to distilled water is that along with many of the impurities, certain important minerals are also boiled out. In essence, the baby is thrown out with the bath water. This makes distilled water very acidic water with a PH low enough to rival that of cola products. With North Americans already having the distinction of being the most acidic people on the planet, adding acid water to one's diet seems illogical. Some have argued that distilled water is not really all that acid. I challenge you to use PH testing strips and decide for yourself. If you refer back to the two criteria for water, you can make a compelling argument that distilled water is *clean* water but I am not convinced that an argument can be made that it is *good* water.

Reverse Osmosis systems work based on pressure. A semi-permeable membrane separates the pure water molecules from most of the contaminants. The membrane does not remove volatile organic compounds, but most systems automatically come with a secondary filter to solve this problem. Reverse Osmosis systems also require a holding tank and a considerable amount of water is wasted in the processing; up to 18 litres of water is needed to make one clean litre. Reverse Osmosis systems also leach out many important nutrients, and although the water does not get as acidic as distilled water, it certainly is acidic. That leaves ordinary filtration systems, which I consider the best choice. To complicate matters, many different types of ordinary filtration systems exist. The two most common types are mechanical

and adsorption filters. Effectiveness of either of these two types of filters, as well as other less common types, is based on the kind of carbon, the design, and quality. However, you can employ one strategy to take the guesswork out of purchasing a good system.

National Sanitation Foundation International (NSF) is a public health and safety company based in Michigan since 1944. This not-for-profit organization is the world leader in development standards for public safety, including water filtration devices. NSF is widely recognized for its scientific and technical expertise. Its professional staff includes engineers, chemists, toxicologists, and environmental health professionals.

It is imperative that you verify that your water treatment system functions as promised. Without independent certification by NSF you are taking the company's word for it. It is not required that a water filtration device be certified by NSF, but with the poor quality of drinking water in North America I would not trust my family's health to a filter without it. Certification by the NSF means that the manufacturer's performance claims have been validated and that the materials used in the construction of the product have been determined by toxicologists to be safe for use with potable water. In addition, NSF ensures that the company's literature is accurate and not misleading. The NSF also performs perpetual inspections of production facilities to certify that the water treatment products continue to meet rigorous standards. When buying a water treatment system, demand to see NSF approval, and if the company does not have it, shop elsewhere.

Having an abundance of good, clean water is one of the best things you can do for your body. Oxygen is the only substance with a more immediate effect on our bodies; without oxygen we would be dead in minutes; without water we may survive five days. I think it is a good idea to supply the body with a continuous flow of the best water possible. I would like to end this chapter the same way I started it by stating that you can do more for your health with eight to 10 glasses of good, clean water per day than just about anything else.

Chapter 11

Attracted to Magnets

I've been closely associated with various aspects of the health care industry for over 14 years. I've seen my share of companies come and go. Companies with questionable products seem to disappear as quickly as they appear. The huge profits in the growing health care field are bringing the charlatans and snake oil salespeople out of the woodwork. Get some doctor to endorse your product and you can make millions long before anyone realizes your magic cure-all elixir is a crab grass and twig mélange.

Many companies market exquisite products. As a microscopist, I am frequently requested to verify the claims made by manufacturers. Over the years I have assisted in the evaluation of many products and many companies. My clients want to know not only that a product is good, but also if that product is good for them. My assessments have led to my recommending the use of certain products and the avoidance of others. My clients find my independent evaluations indispensable. Because I do not profit from the sale of products, my evaluation is not based on vested interests, but rather on objectivity.

One company that I am impressed with is Nikken®, Inc. In 1975, a visionary by the name of Isamu Masuda started this company in Japan. In just over a quarter of a century, Nikken® has become one of the largest corporations in Japan, with annual worldwide sales exceeding $1 billion U.S. Mr. Masuda is still very actively involved in his company and recently moved the worldwide headquarters of this global wellness giant to California (presumably to take advantage of the proximity to all us degenerating North Americans).

Nikken's® main focus is wellness through technology. Nikken is primarily a research and development company (Nikken® is actually an acronym for Japanese Health and Research). Nikken® has developed the most phenomenal marriage between cutting-edge patented technology and the ancient healing arts. This is one reason that Nikken® was able to achieve $1 billion U.S. in annual sales faster than IBM® or Microsoft®. Impressive indeed. Nikken® currently offers hundreds of non-medical products that seem to have a great ability to achieve positive health benefits. They have developed many new technologies and continually introduce more innovative products. This is one of the benefits of having a gigantic research and development budget. The three technologies that have impressed me the most are magnetic technology, far infrared technology and PiMag™ water technology.

Nikken® may not have invented magnetic technology, but I am convinced they have perfected it. The first use of magnetics for health occurred long ago when it was discovered that lodestones could relieve the discomforts of the body. Lodestones are the by-product of volcanic eruptions and are naturally magnetic. It is reported that Cleopatra even wore magnets.

Over 8,000 studies have been performed in Asia asserting the effectiveness, and/or safety of magnetics. The best non-medical explanation as to how magnets work is that although they do not heal the body per se, they put the body in an environment which catalyses the body's natural healing mechanisms. I am not a physicist nor am I an expert in magnetics. I have seen enough studies and enough anecdotal and empirical evidence both firsthand and from my clients that I am thoroughly convinced that magnetics are a viable health modality.

I am an expert in nutrition and I feel confident in rendering my opinion on nutritional issues. As I do not have the same confidence in my abilities to explain magnetics, I would like to call upon an expert in the field. Dr. Jim Walkenbach has a degree in engineering from the United States Military Academy at West Point, a Masters Degree in Biophysics from the Medical College of Virginia, and a chiropractic degree from Logan Chiropractic College, St. Louis. Dr. Walkenbach is an engineer, physicist, biophysicist and doctor of chiropractic. His credentials are most impressive and I consider his opinion on magnetics to be an expert one. Dr. Walkenbach's video, *Mysteries of Magnetics*, is the most comprehensive yet easily understandable explanation of mag-

netics I have ever seen. Dr. Walkenbach's explanation of magnetics is so good I felt compelled to reproduce it here.

First of all we must realize that life is evidenced by the results of chemical reactions. Chemical reactions are exchanges of electrons or other charged particles called ions. The laws of physics are immutable. This means whether you know it or not, whether you believe it or not, the laws of physics affect you. The first law of electromagnetism states that if an electron, or other charged particle, is moving it generates a magnetic field. The corollary to the first law is that if an electron, or other charged particle, encounters a magnetic field, it must move. Every injury or disease produces acids. Acids are molecules that need one or more electrons to be neutral. Acids in the body cause a reaction called chemotaxis. Chemotaxis means that chemicals are taxied to the area of injury or disease. Chemotaxis causes swelling. Swelling causes 80 to 90 per cent of residual pain after the pain of injury. One of the chemicals taxied to the site of injury is antioxidants. Antioxidants are molecules that can donate electrons and remain neutral. When you apply a magnet to an area, the acids of injury or disease are mixed with the antioxidants found in the body. The acids receive electrons donated by the antioxidants. This neutralized the acids. If you have no acids you have no chemotaxis. If you have no chemotaxis you have no swelling. And if you have no swelling, you have no pain. This is an immutable law of physics. It has to happen. If you follow Dr. Walkenbach's sequence you cannot help but realize the power of magnetics.

The earth's naturally occurring magnetic field is at an all-time low level. People, especially those living in large cities, are further shielded from the earth's magnetic energy by concrete, asphalt and steel. Nikken's® magnetic technology compensates for the two factors mentioned above. Nikken's® patented magnetic technologies have been known to relieve discomforts, improve sleep and increase athletic performance.

Nikken's® magnetic products are used in many ways. First, magnetic mattress pads are used to sleep on, providing improved quality of sleep. Better sleep refers to deeper sleep (the so-called delta phase of sleep) for longer periods. This can result in better mental alertness, and a more stress-free lifestyle. Second, Nikken's® magnetic technologies are used to reduce discomfort caused by injury, disease or aging. Magnetic pads applied to the effected area create an environment of healing as explained eloquently by Dr. Walkenbach. I have witnessed so many testimonials of this effect that I am quite awed.

Third, people can walk on magnetic insoles. Nikken's® first product in 1975 was a magnetic insole named "Magsteps."® It is still their best seller to this day. You slip them into your shoes and your responsibilities have ended. The Magsteps® increase energy, give you more strength and better balance. They are one of my favourite Nikken® products and the following story will illustrate the reasons why.

Nikken® products are non-medical products that have a profound effect on health and well being. Dr. Michael Weintraub is an expert on diabetes. He is with the New York Medical College Department of Neurology and Medicine. Many of his patients have a diabetes complication known as diabetic peripheral neuropathy or DPN. DPN is a common and often disabling complication of diabetes mellitus. As many as nine million people in North America will experience neuropathic pain at some point in their lives. Dr. Weintraub was disheartened that the drugs available were virtually useless and had many side effects. Simultaneously, many of his patients began coming in wearing Magsteps® and reporting substantial relief from DPN. At first, Dr. Weintraub believed this was a placebo response; after all how could a non-medical device with no side effects outperform the sacred fruit of the pharmaceutical industry? He set out on a hopeless mission of disproving the value of the Magsteps®. He commissioned a small study and the results shocked him. Undaunted, Dr. Weintraub set up the most comprehensive study of its kind using the most rigorous parameters he could. He reasoned that when the ineffectiveness of the Magsteps® was proven, he did not want to leave any doubt about the methodology. Therefore, he set up a randomized, double-blind, cross-over, placebo-controlled study in 47 sites using almost 400 test subjects. The results of the extensive study were published in the *Archives of Physical Medicine* on May 5, 2003. Not only did the study not prove the ineffectiveness of the Magsteps®, but rather "the present study provides convincing data confirming that the constant wearing of static, permanent, magnetic insoles produces statistically significant reduction of neuropathic pain." The study is key for two reasons. First, it validated by the most stringent medical standards possible the efficacy of magnetics for health. Dr. Weintraub is quoted as saying, "This is the first randomized, double-blind, cross-over, placebo-controlled trial to scientifically demonstrate the merits and clinical benefits utilizing static magnets. The same protocol used in drug studies was used for this study." Second, it confirmed that all magnets are not created equal and that Nikken® is the leading edge in magnetic technology.

The 11-page study is reproduced in its entirety as Appendix C. Permission to reprint this report in its entirety was received from American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation. It is full of fancy medical terms and technical styling that only medical people can appreciate fully. The significance of this study can be summarized in a few words. Those words are "if you have diabetes you would be a fool not to have Nikken Magsteps® in your shoes!" I knew about this study before it was published and have explained how important this is to many people. I have been wearing Magsteps® in my shoes for about six years now. I love them. I get more energy; my feet don't ache anymore, and I have better balance. As I do not have diabetes, if someone offered me $1 000 per day to never wear these insoles again I would probably take it. If I had diabetes, not even $50,000 per day would motivate me to take the Magsteps® out of my shoes. If you are suffer from diabetes, get a pair of these insoles immediately - at less than $100 it's the best investment you can make in your health. Also, take this study to your doctor because it is the type of validation doctors need before they can begin recommending these types of products to their patients.

Another technology that Nikken® possesses, which some (including me) have argued is even more impressive than the magnetics, is far-infrared technology. Like magnetics, far-infrared products are non-medical in nature, but have the potential for an amazing impact on your health. Far-infrared or FIR is quite simply a specific wavelength of light. It cannot be seen, but it can be felt as heat. Light waves transmit heat when they contact an object – sunlight makes an enclosed car interior hot. FIR waves are unique in that they can penetrate the surface of organic materials. For example, when regular heat strikes an object cooking in an oven, the heat raises the temperature of the object's surface and heat is then transferred into the interior by a process known as conduction. Energy from FIR will actually penetrate the object and cook the meat directly.

Years ago an American company marketed a special plate which defrosted meat very quickly. This was FIR technology in action. Nikken® has used that same technology to promote health. As valiant an activity as defrosting meat is, I believe Nikken's® use of this technology is of better service to society. With this technology Nikken® has created fibres and incorporated them into a line of products that have enormous impact. Nikken® produces wraps that can be used for spot

relief on various parts of the body; whole quilts that can be used nightly instead of regular comforters; clothing ranging from vests and undershirts to long underwear, and more and more products are constantly being introduced.

FIR fabrics are regular fabrics like cotton that have been laced with ceramic compounds. They were originally developed for the space program. By using multiple methods of heat storage, FIR fabrics will warm you quickly when you are cold and interestingly, will also keep you cool when you are hot. FIR fabrics do much more than just regulate heat; they reduce the concentration of chemicals in the body including harmful acids.

I am very excited about the future of FIR fabrics. I have seen some startling changes in people's health. My passion for FIR products comes from a very personal experience. In 1998 one of my daughters was scheduled for surgery; at the time she was only 18 months old. Her legs were not developing correctly and doctors informed us that surgery was the only alternative. I delayed the surgery as much as possible. I suppose I was grasping at straws. A second opinion, therapy, anything but break my little girl's legs on purpose and cast them for six weeks. I attempted nutritional support and insisted she wear FIR wraps at all times. Months later the legs miraculously straightened out. Upon examination of her x-ray all the specialist who cancelled the surgery would say was, "I don't know what you're doing, but keep on doing it." This story is so emotionally charged that even six years later, tears flow down my cheeks as I write these words.

The final technology, which I will mention, is known as PiMag™ water. As they have done for so many other products, Nikken® has revolutionized water filtration. The Nikken filtration unit certainly cleans the water to NSF standards. If the filter only cleaned the water it would be like hundreds of other filtration systems. However, this filter also conditions the water.

The water that comes out of the filter system is known as Pi water. Pi water was discovered in Japan in the 1960s. Infusing minute amounts of Ferric Ions into the water creates Pi water which has unusual properties. Pi water has antioxidant capabilities because of its free-radical eliminating properties. Oxygen absorption is increased and many people that consume this water report incredible increases in energy. Pi water is also balanced for acid-alkaline purposes. As we have previously seen, many water treatment systems actually destroy the acid-alkaline balance; this is one of the few systems that enhances it.

Nikken® also conditions the water by sending it through a magnetic field; this is what creates the Mag in PiMag™ water.

Nikken's® products are so revolutionary that many people are experiencing life-changing occurrences. I have dedicated many pages to this company because I feel it is poised to become the world leader in the wellness revolution that is already well under way. Many notable figures from a wide range of fields including medicine, entertainment and sports are heralding the Nikken® products as indispensable for health. These notable figures include Evander Holyfield, boxing heavyweight champion who states, "I like the PiMag™ water best. I know the importance of water and I've seen a difference in my energy curve." Larry King, of *Larry King Live* fame, states, "Magnets work for me!" Regis Philbin, talking about the Nikken® products stated, "Inside my shoe…magnets on my soles…I'm feeling like a young colt!" Tony Gwynn, former baseball player is quoted as saying, "My wife talked me into using Nikken® products because she was getting great results. They made a difference for me …and I feel great!" Johnny Bench, Baseball Hall of Fame catcher states, "I'd broken 16 bones in my body. A friend offered an answer. I started using Nikken® products, truly an amazing thing!" These are only a few of the dozens and dozens of high profile individuals that use Nikken® products. Others of note include Dan Marino, John Elway, Gwynneth Paltrow, Delta Burke, and John Morris.

The amazing power and safety of the Nikken products is absolute. Nikken® has hundreds of products and many other technologies that space constraints prevented me from listing. They have a nutritional line of supplements which is second to none. It is pharmaceutical grade, bio-available and I have seen quite impressive changes with my testing. They have recently introduced a barley grass product developed by Dr. Yoshihide Hagiwara, the world's foremost authority on barley grass. Dr. Hagiwara has been studying barley grass and health for over 40 years. In keeping with the Nikken® philosophy, when a new product is introduced, it is unique, or by far the best of its kind. I look forward to validating some of the positive effects touted by this product, including immune system support, detoxification, colon health, circulatory health, skin elasticity, and most importantly, PH regulation. Nikken® recently introduced an air filtration system that will revolutionize the industry. The inside of most homes has *five* times more pollution than outside. This is truly a timely product.

The products are not on trial. That being said, please be wary of

health care professionals who claim that magnets or other Nikken® products are dangerous or ineffective. Certainly other companies in the marketplace make inferior and ineffective products to cash in on the trend towards magnetics and related modalities. However, because Nikken® is the world leader, some health care professionals have targeted Nikken® and caution against the use of their products. There are really only two reasons that a health care professional would not promote the use of Nikken® products. The first and most common reason is ignorance. Linus Pauling, Nobel Prize winner had a great quote. He stated, "When you're not up on something, you're down on it!" Perhaps they are unaware of the 8,000 plus studies performed in Asia proving their safety, efficacy or both. Perhaps they are unaware of the Weintraub study that unequivocally validates the importance of magnets for diabetics. Perhaps they do not understand engineering, physics, and biophysics as well as Dr. Walkenbach. Perhaps their research focused on the effects of copycat magnetics and other products. Perhaps they just don't know and their ego won't let them concede it.

The second possible reason for being wary of Nikken® products is fear. They are so effective and they are so safe that a health care practitioner may be concerned that their skills will pale in comparison. They may also be concerned about the loss of income and business if their clients suddenly start getting healthier. Yes, Virginia, some health care professionals are in it for the money. If your health care practitioner opposes Nikken® technologies, ask your practitioner to validate and verify the assertions. This is especially important if you have already felt the benefits of the Nikken® products. If your health care professional responds with some malarkey such as, "I'm an expert, trust me," get yourself a real expert.

The more Nikken® products you use the healthier an environment you create for yourself. I firmly believe that the Nikken® scientists and researchers knowingly or unknowingly employ the principles of pleomorphic theory. First and foremost, they strive to balance the body as a whole. As Thomas Edison, whose brilliance illuminated the entire planet, stated over one hundred years ago, "The doctor of the future will give no medicine but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease." Using this definition, Nikken® not only is the doctor of the future, it is the doctor of the present.

Nikken® products are not available in retail stores. In North America they are sold exclusively through Independent Nikken® Wellness Consultants. I encourage you to try some of these most amazing prod-

ucts. I am convinced that both your short-term and long-term health will benefit.

Chapter 12

The Top Ten List

This chapter is dedicated to the ten most important aspects of increasing your chances of health and longevity. Please do not be alarmed. I will not ask you to uproot your family, move to the top of a mountain, drink rainwater, alternate your waking hours between meditation and chanting, and eat nothing but shrubs and weeds. Few people are capable of making such drastic changes and besides, I don't think such drastic changes are beneficial. I do not have utopian aspirations, either for me or for my clients. I make recommendations for the real world.

Normal expectancy of life is 60 or so years of mediocre existence followed by 20 years of pain and then death. That scenario isn't good enough for me and it should not be good enough for you. I agree with every genetic scientist I have ever met that the genetic potential for humans is a minimum of 120 to 140 years of healthy existence. My recommendations will give you the best opportunity of achieving that goal. These recommendations are common sense and those of you interested in your health are already doing many of them (I surmise that you would not be reading this book if you were not interested in your health). You may need some fine-tuning but I guarantee you it is well worth it, given what is at stake.

From what you have read in chapter 10 I'm sure many of you can guess that the number one aspect in your quest for health and longevity is water. We are 72 per cent water; by sheer weight of numbers water has to be important. Modern marketing and advertising tries to con-

vince us that we need flavours, colours and sugars in our beverages. Water is a cheap drink (from your tap) and as such, is for the poor and downtrodden. The affluent people and people in the know must drink more expensive drinks to show their strength and vitality. What a load of, well you know. There is nothing wrong with the occasional non-water beverage. To ensure your health, the first eight to 10 glasses of liquid each and every day should be good, clean water.

The number two aspect of health and longevity is ensuring that you ingest each of the other 91 essential nutrients every day, either in your food or your supplements. Essential nutrients are called "essential" for two very important reasons. First, the body does not manufacture them. For example, if you do not consume calcium your bones will fall apart. That is a biochemical fact. Second, a deficiency in essential nutrients over any length of time will leave you susceptible to ten diseases per essential nutrient. That figure means that we can prevent over 900 diseases by simply making a conscious effort to consume each of the 92 essential nutrients. We can consume many of these nutrients by eating a wide variety of foods. The only exception is minerals which must be consumed via supplements. If everyone on the planet simply drank sufficient good, clean water everyday and conscientiously consumed of all of their essential nutrients I am convinced that we could all but empty our hospitals within 20 years.

The last eight aspects in the top ten list are not in any particular order. The third aspect that I would like to discuss is cartoon supplements. Under no circumstances should cartoon supplements be consumed. This includes vitamins, minerals, essential fatty acids, amino acids, and herbal concoctions. Not only do you get a false sense of security, but you can also poison yourself with these toxins. Buy from reputable companies and be loyal only to your health. Loyalty to a particular sales outlet or friend selling the latest panacea of health is a recipe for disaster. If you can get pharmaceutical grade supplements, you will take the guesswork out of supplementation. To achieve pharmaceutical status the company has performed the due diligence on your behalf. If you cannot obtain pharmaceutical grade for the product you need, remember that the vinegar test (DDT) and nutritional microscopy are two excellent methods of confirming quality. Leave the cartoons to the cartoonists.

The fourth on the list is to avoid the four horsemen of the nutritional apocalypse as much as possible. To review, the four horsemen are sugar, white flour, carbonated beverages and trans fats. I believe

that Chapter 8 has concisely summarized the reasons that these four substances are nutritionally devastating for humans.

I would like to relay a story about one of the most potent horsemen, carbonated beverages. My seven-year-old daughter recently lost a baby tooth. This furnished me with a great opportunity to perform an experiment I had only heard about. After the tooth fairy rewarded her handsomely for her tooth, she (the tooth fairy) graciously agreed to allow me to retain the tooth. I put the tooth in three ounces of cola in a jar in my kitchen cupboard for four days. After the four days were up, it didn't surprise me that the tooth had virtually disappeared. Imagine that, people consume a product that disintegrates something as strong as tooth enamel. No wonder carbonated beverages are a prominent member of the four horsemen.

Much debate exists about eating habits. Every week it seems a new "expert" is promoting a new eating system which will save the planet. High fat, low fat, high carbs, low carbs, high protein, low protein, nothing but raw food, vegetarian, balanced diet between fats, carbs, and protein and so on and so on. In recent years each of these eating styles and many others have appeared. I would like to offer my opinion on the subject. In general, the least imbalanced blood that I see is from people that eat a wide variety of foods, take quality supplements and drink plenty of good clean water. Of course there are exceptions. The best diet is one rich in fruits and vegetables but also including foods such as nuts, seeds, animal products, grains, fish and legumes. If you avoid animal products because they don't agree with you, or for humanitarian reasons, I can understand your abstention. If you avoid them for some perceived health benefit, my research just doesn't support it. I have some clients who are so fearful of animal products that they have refused all the goodness in a supplement because there were trace amounts of animal products in the capsule. I suspect that the negative energy and stress caused by this type of preoccupation and obsession will more than negate any benefit associated with the abstention. It is not my intention to single out the vegetarian; the same negative energy is created by the preoccupied abstention of any food. This is one of the reasons that I suggest limiting the consumption of the four horsemen rather that total elimination.

A recent radio interview so eloquently encapsulated my view on nutrition that I was compelled to share it. Arnold Schwarzenegger was recently interviewed on the radio in order to promote his new movie *Terminator 3*. During the interview, the interviewer asked the question,

"Would you eat a McGriddle®?" (A McGriddle® is a breakfast sandwich from the McDonalds'® hamburger chain. The McGriddle® features two pancakes with baked-in syrup, bacon, processed cheese and eggs.) The interviewer expected Mr. Schwarzenegger, who at 55 still has a physique which allows him to appear almost naked in movies without a body double, to reply by saying something like "I never eat that junk." Instead, Mr. Schwarzenegger said, "If I felt like it I would, but certainly not every day." Although the McGriddle® prominently features three of the four horsemen, Schwarzenegger pleased me with this answer. He also stated that his diet is rich in fruits, vegetables and other healthy foods, but he does occasionally eat desserts and other not so healthy things. This type of confidence is the reason his physique is envied by men 30 years his junior. Compare this type of confidence to someone whose fear won't even allow him or her to consume an animal-based supplement capsule. I think Governor Schwarzenegger is on to something.

Strict adherence to philosophy-based eating systems is not the most advantageous to overall health. By analysing how a common food is regarded by some of the more well-known, philosophy-based eating systems, we can begin to comprehend how confusion could result. I could have chosen dozens of foods for my example but I have decided to use the ordinary chicken egg. The question that I would like the more common eating system purveyors to answer is, "Is the egg a good food for me to eat?" Harvey Diamond, co-author of *Fit For Life,* would answer that the egg is a bad food and should be avoided completely. The late Dr. Robert C. Atkins, the cardiologist best known for the *Atkins Diet,* would say that eggs are a great food and should be consumed often. Barry Sears PhD., best known for the *Zone Diet,* would respond that only the egg whites should be consumed as there is an undesirable substance known as arachidonic acid in the yolk. Dr. Peter J. D'Adamo, a naturopathic physician best known for his book *Eat Right 4 Your Type,* would inform you that if your blood type is O you should eat some eggs; if your blood type is A you should limit your consumption of eggs; if your blood type is B you should eat eggs frequently; and if your blood type is AB you should eat twice as many egg whites as you do yolks.

These four men are all brilliant. Each of them has more nutritional expertise than 50 average medical doctors combined. Each of them has a very different opinion on the health implications of the common

chicken egg. What is the answer to this perplexing question, you ask? The answer is that, for you specifically, eggs may or may not be good. With such a wide variety of opinions among the titans of the nutrition business, I find it reassuring that I can rely on live cell microscopy to individualize general nutritional recommendations.

Aspect number five in our quest for health and longevity is cleansing. Our internals organs work twenty-four hours per day, seven days a week from before birth until the day we die. Throughout that time they never get a break, and they never take a vacation. The next best thing for our organs and other internal parts is periodic cleansing.

We spend much time and effort cleaning our external features. Items in the marketplace exist to keep our skin, hair, and nails in pristine condition. Certainly external hygiene is important, but many people neglect internal hygiene. I believe that the most important parts of the body that require cleansing are the liver and the colon. There are several concoctions on the marketplace for cleansing of the liver and the colon, so I advise the same caution I do when avoiding cartoon supplements. There are also products for cleansing the kidneys, gall bladder, arteries, as well as whole body tonics. Whether or not you need more than just the basic liver and colon cleansing depends upon various stress factors you may or may not be exposed to. Here is where nutritional assessment really shines. In my opinion, no better method than live cell microscopy exists to determine the need for cleansing and for identifying the specific organs that require attention.

Number six in our list of top ten is assuring that proper sleep is part of your routine. The *quality* of sleep is as important as the *quantity* of sleep. You probably know some people who sleep 10 or 12 hours per day and feel worse upon awakening. This is certainly an issue of quality, because quantity cannot possible be an issue here. I do not think anyone on the planet requires more than 10 hours of sleep per day.

Medical research indicates that sleep helps the body to regulate the immune system, blood pressure, weight, stress, mental function, physical function, breathing and just about every other metabolic function. Only a few days without deep sleep could cause you to perish. If you have trouble falling asleep or staying asleep, there are many potential aids. Simple things such as relaxing before turning in can make an incredible difference. In some cases, more complex intervention may be necessary. This may include improving your mattress or taking certain relaxing herbs such as camomile or valerian root.

As we continue our tour of the top ten, number seven is to use natural products, as often as possible, to promote health. Sometimes drugs

and surgery are necessary; however, I find that in North America we reach for these options far too often. Part of the problem is what I call the "Hurry-Up" mentality. We are so accustomed to taking a prepared dinner from the freezer, microwaving it for a few minutes and, presto, dinner is served. The thought of spending 20 minutes preparing a meal from scratch seems like an eternity in comparison. And so it is with our health. Waiting an hour for an herb to relieve our headache is an eternity compared to mere minutes for a headache pill. Forget about the toxic side effects of that pill. Forget about the strain on the organs, especially the liver. Forget about the fact that the body will grow resistant, and the next time we will need bigger and stronger dosages to get the same results. All that matters is our pain will be gone quickly.

So many natural products exist to create balance in our body that I invite you to do your own investigations. One place to start is with products such as those promoted by Nikken®. Consider some of the fine modalities that promote health including: chiropractic, massage therapy, osteopathy, acupuncture, homeopathy, and of course my favourite, nutritional therapy. The above modalities, and so many more too numerous to mention, all work on the basis of the holistic approach. This is why they work so well and this is why their popularity is growing exponentially.

Continuing on to number eight, which is exercise. In May of 2002, I was one of 30 lecturers at a conference for 400 personal trainers in Toronto, Ontario, Canada. My topic was bravely entitled, *Exercise Without Supplementation Is Suicide*. For effect, my Power Point® presentation began with a graphic of the grim reaper. At the end of the presentation I received a standing ovation. This is not because of my speaking skills, but rather because I had proven the point so concisely I swayed even the most sceptical. I cited statistics from the Centre for Disease Control in Atlanta, Georgia. The CDC estimates that every year in the United States, 100,000 people under the age of 30 drop dead during a workout or shortly thereafter. Also, 300,000 people over the age of 30 drop dead during a workout or shortly thereafter. I do nutritional assessments at several health clubs and they all insist on members signing a waiver that basically says, "If you drop dead on a treadmill or anywhere else it's your own fault." I've actually been present during a collapse and the amount of pre-planned activity is astounding.

Why is such a good thing like exercise potentially dangerous? One reason is that when we work out we perspire and sweat out litres of

mineral rich liquid. Most people do not replenish these minerals correctly and eventually the body runs out. A brand new Mercedes® will not run without gas in the tank and our heart will not run without minerals. Four hundred thousand people a year in the United States basically run out of gas.

I do not mention this to dissuade you from exercise because I think proper exercise is important. The more you exercise, the more you sweat and the more essential it is that you replace the nutrients that you have lost. And for heaven's sake do not get tricked into drinking those sugar water and food-dye sports drinks. They are garbage.

Number nine is maintain proper PH balance within your body. Many of the items are in the top ten list because one of their attributes is their effect on reducing acidity. For example, good clean water maintains PH balance. Minerals, which are the most important of the essential nutrients, are key to PH balance. It is no accident that the four horsemen of the nutritional apocalypse are pure acid. And so on. Although many others activities within this list promote PH balance, I consider PH balance so germane to health that it deserves special mention.

The tenth and final item in this list of the top ten most important aspects of health and longevity is to have a positive mental attitude. The mind is so powerful that anywhere from 15 to 30 per cent of the changes during medical studies are attributed to the placebo effect. The placebo effect is the power of the mind to heal the body. There is also a sister effect not as well known. The nocebo effect is the complete reverse. If a person with authority conveys a false diagnosis upon a group of people, up to 30 per cent of them will display symptoms of the disease although they do not have it. This is why doctors must choose their words well. For better or worse, they have a lot of power and control over their patients, and they should use it to promote health, not hinder it.

Positive mental attitude is an important aspect of health. Unfortunately, it is beyond the scope of this book. I invite you to read and study the works of the masters in this field. Some of the titans in this field throughout the years have included Earl Nightingale, Bob Proctor, Napoleon Hill, Dale Carnegie, Norman Vincent Peale, and many others. Studying their works is certainly a rewarding activity. The average person spends $600 per year on hair styling and care products, yet the average person invests less than $100 for personal development. It is sad that we invest six times more on the outside of our head than the

inside. My mentor, Bob Proctor would correct me on this by pointing out that the mind and the brain are not the same and that the mind is in every part of the body. I am pleading artistic license on this one.

My clients that have incorporated the top ten list into their daily lives have been rewarded with incredible benefits. Many of them have a renewed vigour and zest for life. Even the ones that are being treated by standard medicine are noticing that allopathic tools – drugs and surgery – are working with greater efficiency for them. Not a week goes by that I do not receive correspondence thanking me for my assistance. Reading those letters and emails brings me a joy I find difficult to translate into words.

By incorporating the top ten list into your daily life, your health cannot help but improve. If you are currently one of the few enjoying perfect health, it will give you the best opportunity of maintaining that health for many, many more years. Of course there are no guarantees. Even if you methodically employ the top ten faithfully each and every day, it will not help you if someone drops a nuclear bomb on your head. Equally important is to realize that the top ten list is only a general list. You may have a severe allergy to peanuts and one peanut could cause you to go into anaphylactic shock. It is important that you personalize the top ten list and augment it wherever you see fit. I encourage you to work with a nutritional microscopist. He or she will be able to personalize your program and among other things answer the question, “Should I eat eggs?”

Chapter 13

Medical and Scientific Validation

OPEN LETTER TO DOCTORS AND OTHER ESTEEMED MEMBERS OF THE MEDICAL COMMUNITY

Dear distinguished members of the medical community:

This is a seminal moment in the history of medical science. The unique brand of sophistry practised in modern medicine will soon begin to acquiesce to more integrity-based realities. Evidence that the medical establishment is changing is plentiful. Your own journals and newspapers are reporting the dissatisfaction with the current situation. Your relationship to the advancement of true health in the last one hundred years has been tangential, at best.

The invention of the automobile did not sound the death knell for the blacksmith. Those that used their skill with iron and heat became part of the new industry. Those that ignored the changes and convinced themselves that the horseless chariot would not catch on, perished. This is the same challenge that you face right now. Your waiting rooms are usually full. Until recently your patients never questioned your instructions. If you said jump, the patient would invariably respond, "how high?" Occasionally a patient might have asked for a second opinion, but that posed no problem as the second opinion would come from a colleague trained at the same type of school you were. No threat existed there.

Surely you have noticed the subtle changes already. Many of your patients no longer rely solely on allopathic medicine. They question you more and more frequently and the retort, "what medi-

cal school did you go to?" no longer quells their questions, but rather cultures their ire.

Many of your patients are using alternative modalities in conjunction with your treatments. Some tell you and some don't. A day probably doesn't go by without a patient relaying some information on the latest lotion, potion, supplement or gizmo that they have read about that could help their condition. Some of your colleagues embrace the new modalities. My own medical doctor has a degree in acupuncture as well as a medical degree from the University of Toronto Medical School. This is more than a "if you can't beat them join them" mentality. It shows a reaction to the realization that many of these modalities are as powerful or more powerful than allopathic techniques.

One of the modalities you will hear much about in the not too distant future is nutritional microscopy. Occasionally my clients mention nutritional microscopy to their doctors. When the reaction is something like "that's a bunch of nonsense," then I know that that doctor either slept through medical school or stole the medical diploma from someone with exactly the same name (Dr. John Smith, I presume?). In the Summer 2002 edition of *Elm Street* there was an excellent article about nutritional microscopy. Dr. Wallace Sampson was quoted as saying that it is "complete nonsense with absolutely nothing behind it." Wallace Sampson isn't that common a name, so I don't think he stole his medical diploma. Dr. Sampson must consider 150 years of microbiological study to be "absolutely nothing." It is either ignorance or fear that motivated that comment by Dr. Sampson; in either case he has my sympathy. I have great sympathy for members of your profession with that attitude. They will continue making horseshoes even though they haven't seen a horse in years.

Your profession is quite a rigid one. Questioning professors in medical school is tantamount to treason. Changes occur over a protracted period of time. It took the medical establishment 15 years to accept the Heimlich manoeuvre for choking. It took 50 years (this is my favourite one) for doctors to accept that it is a good idea to wash their hands after performing an autopsy before touching a live patient.

I have included this chapter in the solutions part of the book because I consider your profession to be an ally in my mission, rather than an obstacle. The one advantage I have over most of your patients is that I read the same medical journals that you do. I have read the same medical textbooks that you have. I do not have any formal medi-

cal training, but I am well versed in my craft. I am too passionate about health to be derailed by ignorance. Consequently, I routinely obliterate my opponents in debates about nutritional microscopy. I would like to share some of my knowledge to bridge the gap between our two professions.

Whether or not you believe in pleomorphic theory, nutritional microscopy is a valuable tool. Nutritional training is lax in medical schools and this is a fact. In the August 8, 1980 edition, *The Journal of American Medical Association* (JAMA) honestly admitted, "The area of nutrition has been neglected by the medical profession. Most medical schools devote less than three hours of total instruction to nutritional deficiencies and therapy. In short, physicians in the United States (and Canada) are not required to have any understanding of nutrition to be licensed to practice medicine." Has this changed over the last twenty-four years? I do not honestly believe so. I recently performed an assessment on a young fellow who had just completed two years at a very prestigious medical school. I asked him how much nutritional training he had received. He answered that in two years he had two scheduled lectures on nutrition and the professor didn't show up for either one. I don't have a good enough imagination to make something like that up. Of the 127 medical schools in the United States, 70 per cent do not oblige the student to take even one course in nutrition to become a doctor. At 30 per cent of the schools, courses in nutrition are not even offered.

It is often a prerequisite for a medical doctor to inspect a peer reviewed article or study before committing to a new idea. This is one of the reasons I reproduced the Weintraub study on magnets and diabetes. Some of the other sources which I recommend are *Acta Anatomica, Harpers Biochemistry, Guyton's Textbook of Medical Physiology, Mosby's Textbook of Medical Biochemistry, Laboratory Medicine Hematology* and scores of others too numerous to mention. These textbooks are filled with the type of validation you seek before accepting nutritional microscopy as a valid adjunct. With the type of information found in these pages I suspect you can begin to lessen the use of your prescription pad. You will begin to comprehend that backaches are not caused by aspirin deficiency, and cancer is not caused by chemotherapy deficiency.

What do the textbooks report regarding the viability of nutritional microscopy? Let's take spicules for example (Figure 13). Because spicules are protein-based, you might want to consider comparative ratios

like globulin or albumin. It is likely that you will be able to detect low levels of albumin when there are high levels of spicules. This has to be, and this would lead you to think about the liver.

How about if we notice protoplasts in the sample? (Figure 15 and 16) The client probably has an ionic mineralization imbalance. You can now ask further questions of the client and continue the investigation. If you notice hypersegmented white blood cells, any hematology textbook will lead you back to B12 and folic acid. B12 is plentiful in the food supply but to assimilate it, we need strong stomach acid, and intrinsic factor. At this point you can check for hypoclorhydria, or bicarb being exchanged for chloride in the kidneys. This is directly taken from *Guyton's Physiology* and surely you read that textbook.

These are only a few samples to wet your appetite for the powerful connection between medicine and this non-medical procedure known as nutritional microscopy. I suggest you return to these textbooks and firmly grasp this technology before you dismiss nutritional microscopy.

A cynic once told me that all you need to get a degree is to read it, remember it and repeat it. I am convinced that medical school is not that way. The three stages that all truths go through are ridicule, violent opposition and finally self-evident. Most truths have undergone these stages. Take for example the concept that the earth is not the centre of the universe. When Copernicus advanced the theory that the earth was not the centre of the universe they laughed at him (ridicule), stoned him (violent opposition) and now it is accepted (self-evident). When Henry Ford began building the automobile in his garage, his neighbours laughed at him, told him he needed a good horse (ridicule); then they passed a noise ordinance to ban his building it (opposition) and what did you drive to work this morning (self evident)? Nutritional microscopy is currently at the tail end of ridicule and entering the violently-opposed stage.

In his book, *Silent Clots – Life's Biggest Killers*, Dr. James Privitera, M.D. wrote that he would like to see nutritional microscopy in every emergency room in order to evaluate all stroke and cardiovascular patients and other acute medical conditions to determine the presence of clotting. Of course if you use live cell microscopy thromboycte aggregation can be clearly seen (Figure 11). Dr. Privitera was violently opposed by his brethren in the medical profession and the last time I was in an emergency ward I did not notice any microscopes.

You may be wondering if nutritional therapy can be incorporated synergistically into the standard medical practice. When I begin a pres-

entation I always ask the question, "By a show of hands, how many in this room have improved a medical condition through a non-medical approach such as nutrition, massage, magnets and so on?" I ask this for two reasons. First, I want to know what percentage of the audience is enlightened and what percentage isn't. Second, and of more importance, since at least half and usually closer to three quarters of the room raises their hand, I want the rest to be aware that my views are shared by many. The point I am trying to make is that the vast majority of the population has had results with non-medical approaches. If you try to convince them otherwise, it would be like telling the Wright Brothers that it is impossible to fly. They would have responded, "Of course it is possible to fly, we just did!"

I suggest you begin incorporating nutritional concepts into your practice. Your medical training has furnished you with two arrows for your quiver – drugs and surgery. I also suggest that you create a strategic alliance with a nutrition expert. Do not be intimidated if they know more about nutrition than you do; after all your training is in drugs and surgery not nutrition (I've been studying nutrition since 1989 and I'm still learning).

Nutritional microscopy is symbolic of the entire movement towards alternative modalities. I believe that many modalities are entering the tail end of the violently-opposed stage. The only logical conclusion we can arrive at is that the self-evident stage is close at hand.

Politics makes strange bedfellows. I suspect medicine does too. The time to act is now while your waiting rooms remain full. If you wait until they begin to empty (and they will), then your change will be perceived as an act of desperation and pragmatism, rather than one of vision.

Conclusion

Some of the concepts presented is this book are controversial. I anticipate being questioned about my qualifications to assert these concepts. I did not write this book as a teacher, lecturer, or even as a nutrition expert, although I have worn all of these hats. I wrote this book based solely on my observations of 10,000 plus blood samples. I don't think it is flippant of me to say that the only qualifications one needs to write about observations are vision and a writing instrument.

Expertise doesn't always require experience. I consider that Thomas Edison was an expert on the light bulb, and what experience could he have had with the light bulb since it did not exist? I suggested in the introduction that you question everything. I do not believe that this book is above that sort of scrutiny. I am convinced of the accuracy of this book, because the principles presented are sound. I have seen them work over and over again.

We have a small window of opportunity to stem the tide of disease. Before writing this book I attempted to inspire people one a time or in small groups. I am hoping that this book will extend my reach beyond my physical presence. Our hospitals are full, and as the population gets older, hospitals will get fuller. Some politicians feel that the answer to all our health care crisis woes is more money. Incompetence is not solved by money. More money does not lead to efficiency; it leads to more expensive incompetence. More money for beds, more money for drugs, and more money for hospitals will magically solve all of our problems. This type of tomfoolery is the reason we find ourselves in the current medical mess. Albert Einstein, arguably one of the smartest people to ever live, believed that to solve a problem you needed more advanced thinking than the thinking which created the problem. Einstein's theory is the reason I am convinced that more money is not the answer.

The answer to the health care crisis is very simple. The answer to the health care crisis is fewer sick people. The simple answer that fewer sick people will save the health care system appears foreign to the

powers that be. The experts do not agree with this assertion, but the experts have been wrong a disproportionate amount of times throughout history. This is one of those times. Experts were convinced that humans couldn't fly, that the world was flat and that the earth was the centre of the universe. I do not want this to sound like an inquisition, but I also want to convey my passion on these pages.

Every day we each have the opportunity to make a real difference. That difference will be viewed by others and inspire them too. Make a date 75 years from now to play a game of golf, or something else you like to do, and plan on being there vibrant and healthy enough to play your best game ever. I don't even care how old you are now. This isn't the grandiose ranting of a dreamer, with every fibre of my being, I firmly believe this goal is achievable. Don't settle for anything less for you and your family. When the experts tell you that the world is flat, be resilient and resound. Expect their ridicule or violent opposition. Be glad when you see ridicule or violent opposition because it confirms that self-evident is close by. Please do not fall into the trap that allopathic medicine has become. The battle cry of the medical establishment has manifested as "kill the germ, kill the bug, kill the patient."

The wisest among us are beginning to explore newer and better methods to insure health and longevity. Traditional medicine is the study of pathology i.e. the study of disease. If we desire to become rich, we do not generally study the poor. To become healthy, we cannot possible rely solely on the advice of someone who has only studied disease. By combining the best aspects of allopathic medicine (emergency medicine, diagnostic technology) and the myriad of alternative modalities including nutritional microscopy, we can better activate the healing system within. We need doctors of wellness as much as we need doctors of disease. With that positive thought I bid you health and happiness all the days of your long life.

Appendix A

SENATE DOCUMENT NO. 264

"OUR PHYSICAL WELL-BEING IS MORE DIRECTLY DEPENDENT UPON THE MINERALS WE TAKE INTO OUR SYSTEMS THAN UPON CALORIES OR VITAMINS, OR UPON THE PRECISE PROPORTIONS OF STARCH, PROTEIN OR CARBOHYDRATES WE CONSUME"

...Senate Document No. 264

Verbatim Unabridged extracts...

Do you know that most of us today are suffering from certain dangerous diet deficiencies which cannot be remedied until the depleted soils from which our food come are brought into proper mineral balance?

The alarming fact is that foods - fruits and vegetables and grains, now being raised on millions of acres of land that no longer contains enough of certain needed minerals, are starving us no matter how much of them we eat!

This talk about minerals is novel and quite startling. In fact, a realization of the importance of minerals in food is so new that the text books on nutritional dietetics contain very little about it. Nevertheless, it is something that concerns all of us, and the further we delve into it the more startling it becomes.

You'd think, wouldn't you, that a carrot is a carrot - that one is about as good as another as far as nourishment is concerned? But it isn't; one carrot may look and taste like another and yet be lacking in the particular mineral element which our system requires and which carrots are supposed to contain.

Laboratory tests prove that the fruits, the vegetables, the grains, the eggs, and even the milk and the meats of today are not what they were a few generations ago (which doubtless explains why our forefather thrived on a selection of foods that would starve us!)

NO MAN OF TODAY CAN EAT ENOUGH FRUITS AND VEGETABLES TO SUPPLY HIS STOMACH WITH THE MINERAL SALTS HE REQUIRES FOR PERFECT HEALTH, BECAUSE HIS STOMACH ISN'T BIG ENOUGH TO HOLD THEM! AND WE ARE RUNNING TO BIG STOMACHS.

No longer does a balanced and fully nourishing diet consist merely of so many calories or certain vitamins or a fixed proportion of starches, protein and carbohydrates. We know that our diet must contain in addition something like a score of mineral salts.

It is bad news to learn from our leading authorities that 99% of the American people are deficient in these minerals, and that a marked deficiency in any one of the more important minerals actually results in disease. Any upset of the balance, any considerable lack of one or another element, however microscopic the body requirement may be, and we sicken, suffer, shorten our lives.

We know that vitamins are complex chemical substances which are indispensable to the body. Disorder and disease result from any vitamin deficiency.

It is not commonly realized, however, that vitamins control the body's appropriation of minerals, and in the absence of minerals, they have no function to perform

LACKING VITAMINS, THE SYSTEM CAN MAKE SOME USE OF MINERALS. BUT LACKING MINERALS, VITAMINS ARE USELESS.

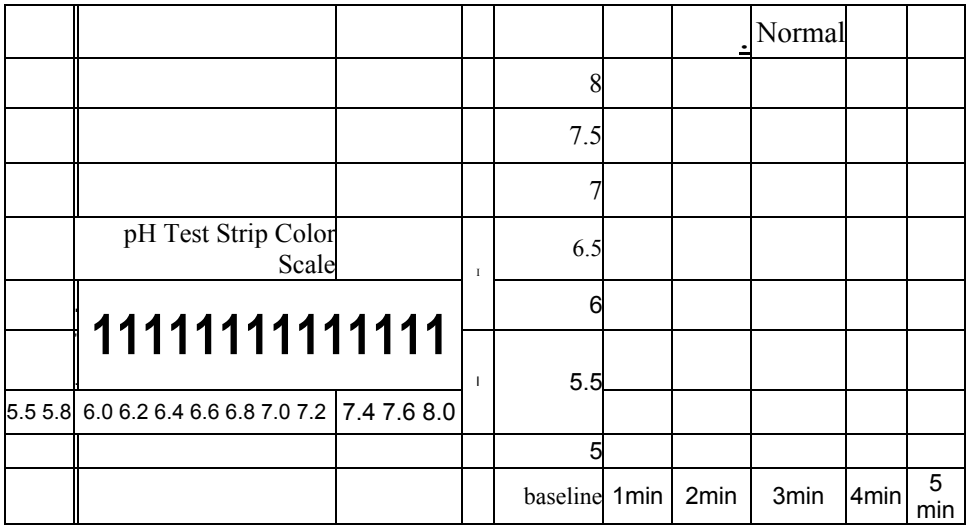
CERTAINLY OUR PHYSICAL WELL-BEING IS MORE DIRECTLY DEPENDENT UPON THE MINERALS WE TAKE INTO OUR SYSTEMS THAN UPON CALORIES OR VITAMINS OR UPON THE PRECISE PROPORTIONS OF STARCH, PROTEIN OR CARBOHYDRATES WE CONSUME.

This discovery is one of the latest and most important contributions of science to the problem of human health.

...US Senate Document No 264

Appendix B

Saliva pH Acid Challenge



Overview

This is a challenge test to monitor mineral reserves. Minerals are needed by virtually
every cell enzyme activity. Average number of cells: 450,000,000! Average number of cell enzyme reactions per cell per second: *35,0001* By subjecting the patient to an acid solution (lemon juice), alkaline buffer reactions can be monitored along a time line. The degree of adaptability of the patient's alkaline buffer system will reveal the state of the mineral reserves.

Clinical Application

The test results pattern can indicate:
Available mineral reserves Hyper-sympathetic nervous system
Potential adrenal stress
Mineral depletion risk factors

Degree of stress of the patient
Cell rigidity and serious organ pathology

Associated Conditions Often Seen

osteoporosis emotional stress mental stress chronic fatigue fibromyalgia

hypochlorhyd ria malabsorption electrolyte imbalance weak immune system anemia

Other Testing May Reveal

uric acid> *f5.5/m5.9*
albumin> 5.0
alk. phos. < 70
magnesium <2.0
potassium >4.5
hemoglobin> fl 4.5/ml5.0
hematocrit> f44/m48

Testing Requirements

pH paper
Lemon juice concentrate Timer device
Saliva pH Challenge Form

Test Procedure

Tear off 7 strips of pH paper, each about 2" long. Have ready a cup with 1 tbsp. of lemon juice mixed with 1 tbsp. of water. Make a pool of saliva between lips (or put spittle into plastic spoon), dip 1/2 of a pH strip into pool and remove immediately. Measure the color of the pH paper against the pH scale provided and record as baseline. Drink lemon juice. Take four swallows, then test with pH paper.
Record results of the second pH strip.
For the next 5 minutes, one minute apart, test the saliva using the last 5 pH strips.

Record each reading on the Saliva pH Form.

Date				
pH baseline				
Lemon juice				
1 miD				
2min				
3min				
4min				
Smin				

Scale Explanation

NORMAL RESULTS
Baseline = 6.5 to 6.8
Lemon juice = 5.0
I minute = 6.4
2 minutes = 7.0
3 minutes = 7.2
4 minutes = 7.4 '
5 minutes = 7.6 or above
(easily produces alkaline buffers)

ALKALINE REACTION
Baseline = 7.0
Lemon juice = 5.0
1 minute = 6.6
2 minutes = 7.0
3 minutes = 7.2
4 minutes = 7.2
5 minutes = 7.2
(normal reaction to acid increase in body)

MINERAL DEFICIENCY
Baseline = 6.0
Lemon juice = 5.0
1 minute = 6.4
2 minutes =7.0
3 minutes = 6.8
4 minutes =6.6
5 minutes =6.6
(cannot maintain alkaline buffers)

HYPER-SYMPATHETIC with MINERAL DEFICIENCY

Baseline	= 5.0
Lemon juice	= 5.0
I minute	= 8.0
2 minutes	= 8.0
3 minutes	= 8.0
4 minutes	= 8.0
5 minutes	= 8.0

(minimal alkaline buffers.. .ammonia present)

HYPER-SYMPATHETIC with MINERALS INTACT

Baseline	= 6.8
Lemon juice	= 5.0
I minute	= 8.0
2 minutes	= 7.6
3 minutes	= 7.4
4 minutes	= 7.4
5 minutes	= 7.4

(rapid alkaline reaction, sustained alkaline buffers)

PROBABLE SERIOUS ORGAN PATHOLOGY

Baseline	= 5.0
Lemon juice	= 5.0
I minute	= 5.0
2 minutes	= 5.0
3 minutes	= 5.0
4 minutes	= 5.0
5 minutes	= 5.0

(cell rigidity, no buffers, extreme acidity)

APPENDIX C

Static Magnetic Field Therapy for Symptomatic Diabetic Neuropathy: A Randomized, Double-Blind, Placebo-Controlled Trial

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ABSTRACT. Weintraub MI, Wolfe GI, Barohn RA, Cole SP, Parry GJ, Hayat G, Cohen JA, Page JC, Bromberg MB, Schwartz SL, and the Magnetic Research Group. Static magnetic field therapy for symptomatic diabetic neuropathy: a randomized, double-blind, placebo-controlled trial. Arch Phys Med Rehabil 2003;84:736-46.

Objective: To determine if constant wearing of multipolar, static magnetic (450G) shoe insoles can reduce neuropathic pain and quality of life (QOL) scores in symptomatic diabetic peripheral neuropathy (DPN).

Design: Randomized, placebo-control, parallel study.

Setting: Forty-eight centers in 27 states.

Participants: Three hundred seventy-five subjects with DPN stage II or III were randomly assigned to wear constantly magnetized insoles for 4 months; the placebo group wore similar, unmagnetized device.

Intervention: Nerve conduction and/or quantified sensory testing were performed serially.

Main Outcome Measures: Daily visual analog scale scores for numbness or tingling and burning and QOL issues were tabulated over 4 months. Secondary measures included nerve conduction changes, role of placebo, and safety issues. Analysis of variance (ANOVA), analysis of covariance (ANCOVA), and chi-square analysis were performed.

Results: There were statistically significant reductions during the third and fourth months in burning (mean change for magnet treatment, −12%; for sham, −3%; $P<.05$, ANCOVA), numbness and tingling (magnet, −10%; sham, +1%; $P<.05$, ANCOVA), and exercise-induced foot pain (magnet, −12%; sham, −4%; $P<.05$, ANCOVA). For a subset of patients with baseline severe pain, statistically significant reductions occurred from baseline through the fourth month in numbness and tingling (magnet, −32%; sham, −14%; $P<.01$, ANOVA) and foot pain (magnet, −41%; sham, −21%; $P<.01$, ANOVA).

Conclusions: Static magnetic fields can penetrate up to 20mm and appear to target the ectopic firing nociceptors in the epidermis and dermis. Analgesic benefits were achieved over time.

Key Words: Diabetic neuropathies; Magnetics; Rehabilitation.

DIABETIC PERIPHERAL NEUROPATHY (DPN) is a common and often disabling complication of diabetes mellitus (DM). Depending on criteria, DPN is estimated to occur in 50% to 90% of individuals with diabetes for more than 10 years.[1-4] As many as half of the 16 million diabetics in the United States will experience neuropathic pain at some point in their lives.[5-9] DPN begins insidiously, presenting as a symmetrical sensory polyneuropathy that follows a stocking-glove pattern. Selective involvement of unmyelinated C fibers and small myelinated A delta fibers produces pain of the burning dysesthetic type and is often accompanied by hyperalgesia and allodynia in the feet.[7,10-12] Neuropathic pain symptoms fluctuate and can be described as superficial, deep, aching, lancinating, constant, or episodic. Complaints are often worse at night. Although initial symptoms and the course of DPN vary, once neuropathic pain is established, it is almost always progressive, leading to increased discomfort and disability.[6,13-15] Furthermore, individuals with DPN are at augmented risk for foot trauma and infections that may necessitate amputative procedures.[2,16]

From a pathophysiologic standpoint, these symptoms are believed to be secondary to ectopic firing of nociceptive afferent axons that are undergoing degeneration.[7,9-12] This ectopic depolarization appears to be related to dysregulated expression of sodium and calcium channels[17-19] and a deficit in the potassium-internal rectifying channel.[20-22] Neurons at the level of the dorsal root ganglion (DRG) also become hyperexcitable after peripheral nerve injury, presumably because of loss of peripheral inhibitory influences.[23] Currently, there are no treatments that reverse or arrest progressive diabetic polyneuropathy.[24] A variety of standard oral therapies used for symptomatic neuropathic pain include tricyclic antidepressants,[25] antiepileptic medications,[26] and narcotic analgesics.[27,28] Additionally, topical products such as capsaicin[29,30] have been applied and have produced incomplete pain relief and significant side effects. Overall, the results have been disappointing and associated with significant side effects.[15,31,32] The search for reliable, safe, and effective mainstream treatments for the neuropathic pain of DPN remains a major challenge,[13,15,25-27,31-34] and, not surprisingly, patients have explored a variety of alternative approaches, including homeopathy, acupuncture, and magnetic

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therapies. Spurred on by anecdotal reports, the use of permanent magnets for relief of pain has become extremely popular in recent years, with consumer spending exceeding $500 million in the United States and Canada and $5 billion worldwide.[35,36] The idea that magnetic energy from commercially available, weak magnets applied locally to the feet could influence chronic neuropathic pain may seem absurd, and yet this approach is not new.[37-41] In the absence of randomized, placebo-controlled trials, the medical community has been understandably skeptical, which has limited the acceptance of magnets as a valid option for pain relief.[42,43] However, 2 prior pilot studies successfully showed reduced neuropathic pain in 75% and 90% of patients with refractory DPN over a 4-month period, with constant application of commercial multipolar foot magnets (450G).[35,36] These surprising and unexpected favorable results prompted the present study—a nationwide, randomized placebo-controlled investigation into the legitimacy of static magnetic fields in the relief of pain from DPN.

METHODS

Enrollment Criteria

From August 1999 through January 2001, 375 subjects with symptomatic symmetrical sensory and motor diabetic peripheral neuropathy (DPN stages II or III), as defined by Dyck et al,[44,45] were recruited from 48 sites in 27 states. Consecutive patients from neurologic, podiatric, and diabetic clinics or private practice were enrolled. A few centers advertised their participation in this nationwide study to attract eligible volunteers. The primary providers were skilled clinicians who had previously participated in pharmacologic studies of diabetes and/or pain management. Enrollment criteria required that all subjects have at least 2 abnormalities on neurologic examination (sensory, motor, reflex), moderate (II) to severe (III) neuropathic pain, abnormal nerve conduction or quantitative sensory testing, and/or symptoms of autonomic dysfunction. Symptoms had to be constant and present over 6 months and refractory to various medications. Subjects included persons with insulin-dependent diabetes mellitus (IDDM) and those who were not insulin dependent (NIDDM). Subjects were excluded if other systemic diseases could potentially explain their symptoms. As a safety precaution, pregnant women and subjects who had mechanical insulin pumps or cardiac pacemakers were also excluded. Subjects tabulated validated[46-50] daily pain scores and similar, but unvalidated, quality of life (QOL) scores for 4 months and agreed that they would not attempt to break blinding of the foot devices. They also agreed to wear the devices constantly, 24 hours per day. Moderate pain was defined as scores of 5.0 to 6.99 and severe pain was defined as 7 and higher. No new analgesic drugs were allowed during the study, but individuals could remain on (or reduce) their current regimen of neuropathic pain medication. The randomized, placebo-controlled, parallel design study was fully explained to all subjects and voluntary withdrawal was allowed without prejudice.

Randomization

Demographic data (age, height, weight, gender, race, glycosylated hemoglobin [Hb A_{1c}], family history, duration of DM, complications of DM, treatment of DM) were collected at each site. Subjects completed a 2-week baseline Likert visual analog scale (VAS) quantification of their pain symptoms 3 times daily to establish a reliable mean pain score. QOL scores were recorded once daily to measure (1) sleep disturbance secondary to foot pain and (2) exercise-induced foot pain after a 10-minute exertion such as walking or other physical activity. After eligibility was confirmed and written informed consent accepted, subjects were randomized consecutively (1:1 via computer assignment) to receive an active magnetic shoe insole or a sham insole of similar appearance. Randomization was stratified by center and gender. Neither the subject nor the research staff was aware of the treatment allocation. If corrective trimming of the device was necessary to provide a comfortable fit in the shoe, a noninvolved secretary or nurse would trim them along identifiable lines around the margins. The subjects and site investigators were not present if trimming was necessary. All data were submitted to a central data bank under the supervision of the statistician who was aware of the assignments.

Magnetic Devices

The devices used in the present study are comprised of a reinforced and flexible magnetic rubber compound pressed into a sheet and cut into the shape of a shoe insole for men and women. Strontium ferrite powder is mixed into this rubber binder and magnetized with a patented pattern of alternating magnetic poles. Each pole is adjacent to and contiguous with another triangular-shaped magnetic pole of opposite polarity on each of the 3 sides of the triangle. This pattern produces a continuous array of alternating magnetic poles in every direction across the insole (fig 1).

The strength of the magnetic field is 450G, as measured with a conventional gauss meter on the surface of the insoles at the center of the triangle (10,000G=1T). The field depth of penetration is 20mm and is reduced inversely with the square of the distance. By far, the simple, most direct method of determining field strength at various distances from the insole surface is by instrument measurement. For example, using a Lakeshore 420 gauss meter with a flat transverse probe[a] has an accuracy of ±.25%. The effective field of the magnet from the insole surface is 20mm. Beyond 20mm, the magnetic field measures in the range of the ambient magnetic field of the earth at about 0.5G. The maximum surface field strength of the magnetic insole is 450G. At a 1-mm distance from the surface, the field strength drops to 249G. At 2mm, the field strength is measured at 150G. At 3mm (approximately ⅛in), the field strength is 90G. Flux density at the target area may be more clinically relevant than the magnetic reading at the surface of the magnet. The specific flux density, however, at the target area is unknown. At 13mm above the surface of the magnetized insole, the reading is only 1.5G. The sham insole's gauss meter readings did not exceed the 0.5G of the earth's magnetic field. Both sham and active magnetic shoe insoles could not be distinguished in terms of appearance, consistency, or weight. The magnetic insoles used in the present study were manufactured by Nu-Magnetics Inc,[b] and are commercially sold under the brand name of Magsteps® by Nikken Inc.[c]

Outcome Measures

Pain was measured on an 11-point numeric pain rating scale (VAS; scale range: 0, no pain; 10, worse possible pain). The primary efficacy measure was the reduction in neuropathic pain scores at week 16 compared with baseline scores. We also compared month-to-month changes. We looked specifically at 2 of the most common pain symptom scores of numbness or tingling and burning. Each symptom was recorded 3 times daily so to reduce any new variables (VAS range, 0–10). Similarly, QOL issues were considered primary efficacy measures with reduction of exercise-induced foot pain and sleep interruption secondary to pain (VAS range, 0–10). These were recorded once daily. Secondary outcomes compared baseline

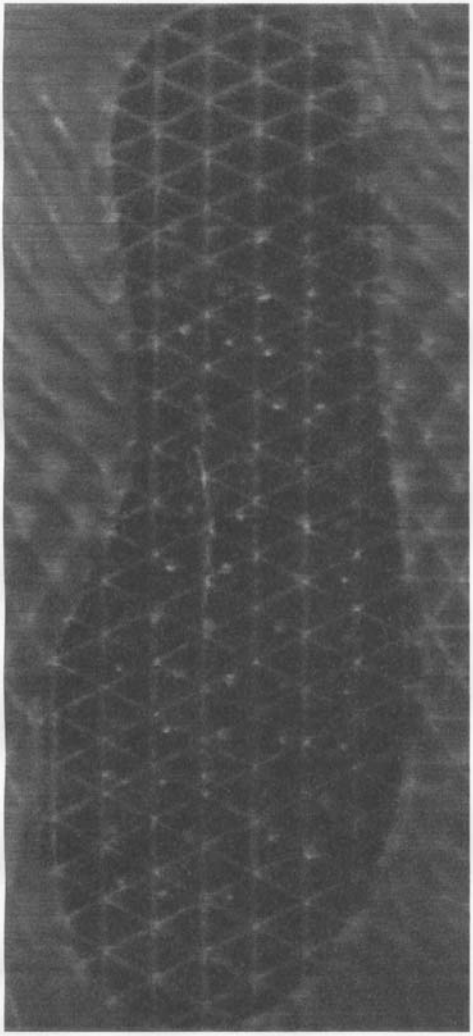

Fig 1. Magnetic field visualization with superimposed magne-view film. The microencapsulated colloidal nickel particles congregate in alignment with the magnetic flux lines producing a 2-dimensional image of the pole pattern.

and 16-week values of neurologic examinations, nerve conduction velocity (NCV), quantitative sensory testing (QST) thresholds (Neurometer®[51d] or Case IV[52]), and other electrophysiologic tests.[53,54] Safety measures with tabulation of adverse events were monitored as was cause for dropouts. Additionally, an interim study performed before the end of this study at selected sites assessed masking and bias by asking patients and investigators whether they believed that a placebo or active device was used or whether they had no opinion.

Sites

There were 48 investigative sites in 27 states. They included 11 university-based centers and 37 private practices. A neurologic examination was performed before entry to identify the presence of a sensory peripheral polyneuropathy in the feet that met the Dyck[45] criteria of moderate (II) to severe (III) DPN. NCVs of the peroneal and/or posterior tibial (motor) and sural nerves (sensory) were performed in a standardized manner to confirm the presence of neuropathy. Selected sites performed forced-choice QST by using Neurometer (CPT) or Case IV equipment and other neurophysiologic tests, such as biothesiometry and sympathetic skin response (SSR). Because no standard, validated device exists and controversy about their merits surrounds the various devices, we let each site use their standard analysis technique.

Investigational Review Board

Phelps Memorial Hospital Investigational Review Board (IRB) reviewed and approved the protocol, as did IRBs at individual university centers. Phelps Memorial served as a central IRB for many investigative sites and appropriate safety and progress data were submitted to this IRB in a timely fashion. All patients provided written informed consent to participate in this study.

Statistical Analyses

For each of the 4 outcome measures (burning, numbness and tingling, foot pain, sleep scores), a 2 (treatment, sham) ×5 (baseline, 1mo, 2mo, 3mo, 4mo) repeated-measures analysis of variance (ANOVA) was used to assess possible differences between treatment and sham groups over the course of the study. These analyses were followed by a 2 (treatment, sham) ×2 (2mo, 4mo) analysis of covariance (ANCOVA) with baseline score as the covariate to explore treatment effects during the last 2 months of the study. Furthermore, for each outcome measure, we grouped patients into 3 categories of severity based on baseline scores. Ratings of 1 to 4 corresponded to mild pain; 5.0 to 6.99, to moderate pain; and 7 to 10, to severe pain.[55] ANOVAs were used to compare the mean changes separately for each severity group. For each of the outcome measures, chi-square tests for independence were used to assess magnet versus sham group differences in the percentage of patients who had at least a 30% reduction in severe pain. Finally, ANOVAs and ANCOVAs were used to assess treatment effects for subgroups defined by measures known to previously affect outcomes in this population. For all tests, a P value of .05 or less was considered to indicate statistical significance. Subjects with any missing data for an endpoint were excluded for that analysis.

On the basis of published results of clinical trial placebo responses for painful diabetic neuropathy,[26] at an α level of .05 and a power of .80, with 150 subjects per group, it was estimated that a difference between treatment and sham group responses of 17% or more would be statistically significant.[56] Analyses were conducted with SPSS.®

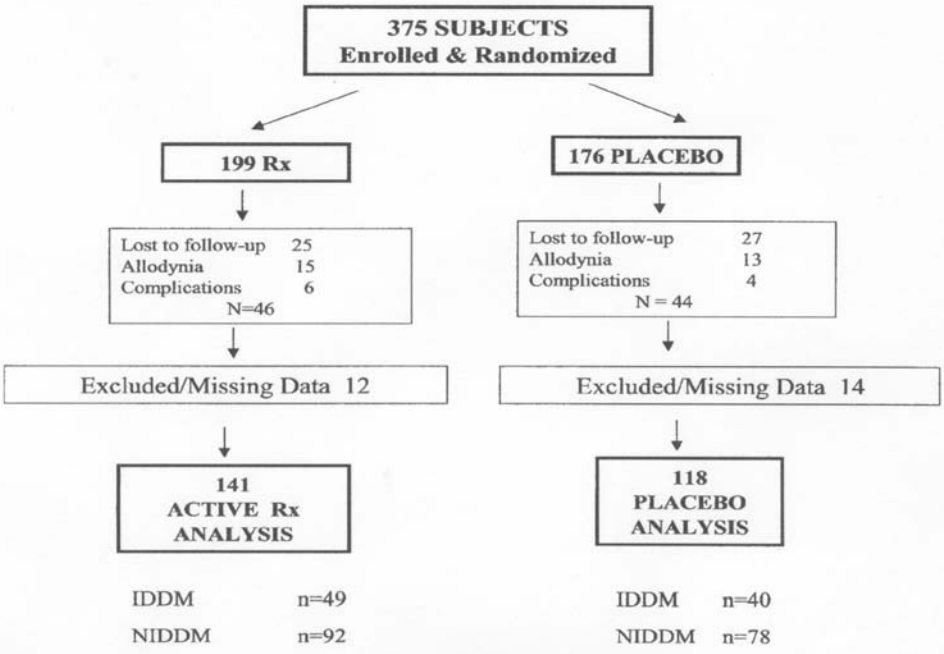

Fig 2. Flowchart of the randomized placebo-control trial. Abbreviation: Rx, treatment.

Adverse Events

Potential injury to the sole producing ulcer or abrasion or infection was monitored. Mechanical allodynia because of sensitive feet was also tabulated.

Role of Funding Source

This study was initially funded by Nu-Magnetics and supplemented by Nikken Inc. The grant recipients had complete independence regarding study design, data analysis, and manuscript preparation. The study's protocol was approved by the National Institutes of Health, but not funded.

RESULTS

The flow of patients through the clinical trial is depicted in figure 2. Three hundred seventy-five subjects were randomly assigned to treatment and sham groups, and 259 subjects (69%) successfully completed this 4-month trial. Of the 90 dropouts, 74% in the treatment group and 71% in the sham cohort dropped out before the second month. Of the total group, 45% were lost to follow-up, 24% dropped because of allodynia, and 9% dropped for nonstudy complications. Twenty-six subjects were dropped by the statistician for missing or questionable data. The baseline characteristics for the remaining 259 subjects were similar for treatment and sham groups (table 1). The *t* tests for independent samples revealed no baseline differences between the treatment and sham groups for the primary end points (table 2). Racial-ethnic proportions at enrollment were a representative cross-section of the US population. In addition, a series of ANOVAs revealed no baseline differences or differences over the study period between patients at university centers and in private practice settings.

Primary Outcomes

Burning. Burning scores decreased 30% for the treatment group from baseline (mean ± standard deviation, 5.13±2.29) to month 4 (3.61±2.44) and decreased 24% for the sham group from baseline (5.27±2.40) to month 4 (4.01±2.81) (P=.000, ANOVA; fig 3). There was a larger decrease in mean scores for the treatment group (−12%) from month 2 (4.09±2.38) to month 4 (3.61±2.44) than for the sham group (−3%) from month 2 (4.12±2.65) to month 4 (4.01±2.81) (P<.05, ANCOVA).

Numbness and tingling. Numbness and tingling scores decreased 29% for the treatment group from baseline

Table 1: Baseline Characteristics of the Subjects

Characteristic	Treatment Group (n=141)	Sham Group (n=118)
Age (y)		
Mean	62.6±11.3	63.2±11.2
Range	36–85	27–85
Weight (lb)	206.7±47.0	207.1±41.2
Height (in)	67.7±4.05	67.9±4.28
Sex (n)		
Female	66	58
Male	75	60
Race (n)		
White	107	103
Nonwhite	34	15
Years since onset of diabetes	13.0±10.8	11.6±10.2
HB A_{1c}	7.7±1.8	7.6±2.1
Nerve conduction velocity (n)		
Normal	5	3
Axonal	42	31
Demy	16	14
Mixed	51	49
Insulin (n)		
Yes	49	40
No	92	78

NOTE. Values are mean ± standard deviation (SD) or as otherwise indicated.
Abbreviation: Demy, demylinating.

(5.63±2.08) to month 4 (4.02±2.46) and decreased 22% for the sham group from baseline (5.89±2.02) to month 4 (4.57±2.58) (P=.000, ANOVA; fig 4). There was a decrease in mean scores for the treatment group (−10%) from month 2 (4.46±2.23) to month 4 (4.02±2.46) and a small increase for the sham group (+1%) from month 2 (4.54±2.58) to month 4 (4.57±2.58) (P<.05, ANCOVA). For patients with severe pain at baseline, numbness and tingling decreased 32% for the treatment group from baseline (8.17±.85) to month 4 (5.58±2.43) and decreased 14% for the sham group from baseline (8.12±.95) to month 4 (6.97±2.38) (P<.01, ANOVA; fig 5). Of the 38 treatment patients with severe pain at baseline, 27 (71%) had mild or moderate pain at month 4. In contrast, of the 40 sham patients with severe pain at baseline, 16 (40%) had mild or moderate pain at month 4 (P<.01, χ^2).

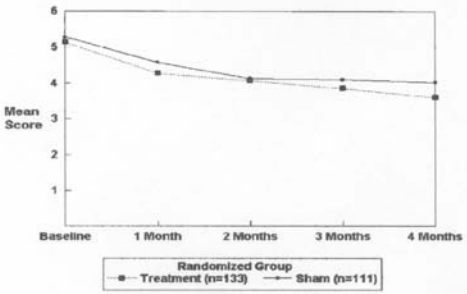

Fig 3. Burning mean scores for treatment and sham subjects.

Foot pain. Foot pain scores decreased 31% for the treatment group from baseline (5.84±2.33) to month 4 (4.05±2.66) and decreased 25% for the sham group from baseline (5.76±2.29) to month 4 (4.31±2.80) (P=.000, ANOVA; fig 6). A larger decrease in mean scores existed for the treatment group (−12%) from month 2 (4.62±2.53) to month 4 (4.05±2.66) than for the sham group (−4%) from month 2 (4.47±2.68) to month 4 (4.31±2.80) (P<.05, ANCOVA). For patients with severe pain at baseline, foot pain decreased 41% for the treatment group from baseline (8.49±1.07) to month 4 (4.97±3.10) and decreased 21% for the sham group from baseline (8.35±.95) to month 4 (6.56±2.50) (P<.01, ANOVA; fig 7). Of the 40 treatment patients with severe pain at baseline, 29 (69%) had mild or moderate pain at month 4. In contrast, of the 35 sham-device patients with severe pain at baseline, 17 (49%) had mild or moderate pain at month 4. This trend in category change did not reach statistical significance (P=.07, χ^2).

Sleep. Sleep scores decreased 30% for the treatment group from baseline (4.83±2.66) to month 4 (3.36±2.76) and decreased 30% for the sham group from baseline (5.19±2.79) to month 4 (3.65±3.04) (P=.000, ANOVA; fig 8). There was a nonsignificant trend for a larger decrease in mean scores for the treatment group (−13%) from month 2 (3.83±2.83) to month

Table 2: Mean Scores for Primary Endpoints From Baseline to Month 4

Outcome Measure	n	Baseline	Month 1	Month 2	Month 3	Month 4
Burning						
Treatment	133	5.1±2.3	4.3±2.3	4.1±2.4	3.9±2.5	3.6±2.4
Sham	111	5.3±2.4	4.6±2.6	4.1±2.7	4.1±2.7	4.0±2.8
Numbness and tingling						
Treatment	137	5.6±2.1	4.7±2.2	4.5±2.2	4.3±2.4	4.0±2.5
Sham	116	5.9±2.0	4.9±2.3	4.5±2.6	4.6±2.6	4.6±2.7
Foot pain						
Treatment	121	5.8±2.3	4.9±2.4	4.6±2.5	4.2±2.6	4.1±2.7
Sham	106	5.8±2.3	4.9±2.4	4.5±2.7	4.3±2.8	4.3±2.8
Sleep						
Treatment	112	4.8±2.7	4.0±2.8	3.8±2.8	3.5±2.7	3.4±2.8
Sham	98	5.2±2.8	4.6±2.6	3.8±2.8	3.8±3.0	3.7±3.0

NOTE. Values are mean ± SD.

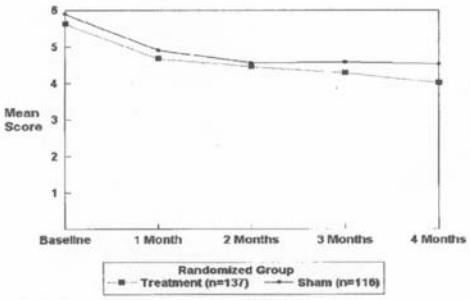

Fig 4. Numbness and tingling mean scores for treatment and sham subjects.

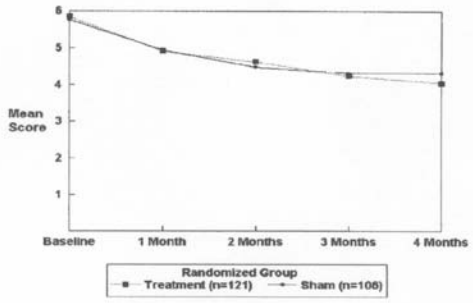

Fig 6. Foot pain mean scores for treatment and sham subjects.

4 (3.36±2.76) than for the sham group (−3%) from month 2 (3.76±2.83) to month 4 (3.65±3.04) (P=.08, ANCOVA).

Secondary Outcomes

There was no evidence of deterioration of nerve function clinically or electrophysiologically in those patients reporting improvement in pain scores. Thus, there was no evidence of clinical worsening. Of the 259 subjects, 61 (24%) had Neurometer, Case IV, SSR, or biothesiometry studies. No significant differences existed between subjects in the treatment group (n=32) and those in the sham group (n=29) from baseline to 4 months on these measures.

Subgroup Analyses

For patients not taking oral antidiabetic agents, a larger decrease occurred in mean burning scores for the treatment group (−14%) from month 2 (3.81±2.38) to month 4 (3.30±2.39) than for the sham group (−1%) from month 2 (3.91±2.87) to month 4 (3.86±2.85) (P<.01, ANCOVA). There was a nonsignificant trend for a larger decrease in mean numbness and tingling scores for the treatment group (−10%) from month 2 (4.26±2.21) to month 4 (3.84±2.46) than for the sham group (−1%) from month 2 (4.78±2.68) to month 4 (4.24±2.59) (P=.08, ANCOVA). A similar pattern was reported for patients with severe foot pain scores, with reductions of 41% and 21% for treatment and sham groups, respectively, and for numbness and tingling, with reductions of 32% and 23% for the 2 groups, respectively. Results remained significant with a Bonferroni correction.[57] By using the 30% pain reduction criterion as suggested by a Farrar stratification analysis,[58] we noted that 50% of patients with magnets had at least a 30% reduction in severe numbness and tingling, compared with 25% of patients with sham devices (P<.05, χ^2). Although the percentages for foot pain (32% vs 19%) and burning (42% vs 29%) were impressive, they were not statistically significant. No differences between treatment and sham groups were found based on family history of diabetes, baseline nerve conduction, or Hb A_{1c} scores.

Blinding

An interim analysis for bias and breaking the blind was performed at those active sites 6 months before study terminated (university and private practice). This analysis was to determine whether the present study was adequately blinded.

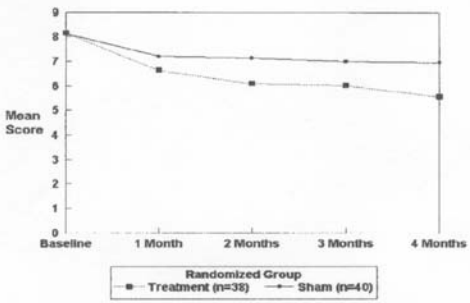

Fig 5. Numbness and tingling mean scores for subjects with baseline severe pain.

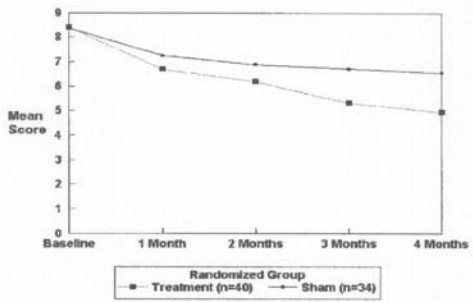

Fig 7. Foot pain mean scores for subjects with baseline severe pain.

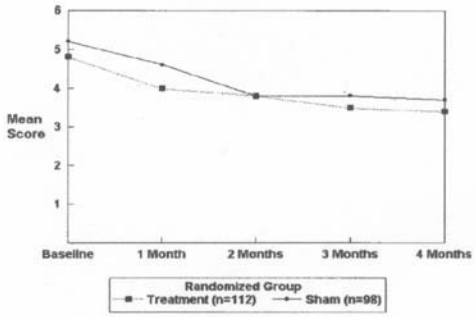

Fig 8. Sleep mean scores for treatment and sham subjects.

Subjects and examining investigators were asked at the end of the study to identify the treatment provided. Sixty-three percent of the subjects responded. Of the 83 treatment group subjects responding, 40 (48%) believed they had active magnets, 31 (37%) believed they had sham magnets, and 12 (15%) did not know. Of the 80 sham-device subjects responding, 29 (36%) believed they had active magnets, 30 (38%) believed they had sham magnets, and 21 (26%) did not know. Of 46 investigators of treatment subjects, 23 (50%) believed the subjects had active magnets, 15 (33%) believed they had sham magnets, and 8 (17%) did not know. Of 50 investigators of sham-device subjects, 22 (40%) believed the subjects had active magnets, 15 (30%) believed they had sham magnets, and 12 (26%) did not know. There was no significant association between the actual treatment received and the belief about the treatment received for subjects or investigators.

Dropouts

The dropouts were evenly represented and did not impact on the primary analysis for efficacy. We did not use the intention-to-treat (ITT) model for estimates of missing data, because 75% of the dropouts from the treatment group and 71% from the sham group dropped out before month 2. As shown in our figures, the magnetic effects became apparent after month 2; therefore, using the ITT model with most estimates based on data before month 2 would severely bias the analysis. Dropouts secondary to allodynia were equally common in both groups. Foot sensitivity is a well-known phenomenon in symptomatic patients with DPN. Thus, it is not surprising that the application of an insole (magnetized or unmagnetized) would be unpleasant to a small but significant group of patients. There were 90 dropouts (lost to follow-up, allodynia, complications) equally represented out of a sample size of 349 (25.8%). There were no mean differences between the 46 treatment and 44 sham-device patients for age, years since onset of diabetes, and baseline Hb A_{1c}, burning, numbness and tingling, foot pain, and sleep scores ($P>.05$, ANOVA). The statistician dropped 26 patients (equal representation) because of site difficulties obtaining data and unreliable data.

Safety

Measures of safety included constant reporting of adverse events and the cause for dropouts. There were no significant complications.

DISCUSSION

This is the first multicenter, double-blind, placebo-controlled study to examine the role of static magnetic fields in a homogenous cohort of DPN with neuropathic pain. The antinociceptive effect was significantly pronounced during the third and fourth month, indicating that a tonic and chronic exposure must be present to inhibit and influence sensitized afferent pain fibers. The magnitude of the reduction of burning, numbness and tingling, and exercise-induced foot pain, especially in severe and extreme cases, was comparable or superior to that observed in the gabapentin,[26] tramadol,[28] and lamotrigine[24] studies, but without side effects. Additionally, a change of 1.5 in the 0 to 10 pain scale represents a clinically meaningful difference.[59,60] This also reaffirms the data from 2 prior pilot studies.[35,36] Subset analysis identified that subjects with severe pain[55] and those not taking oral hypoglycemic agents responded more favorably than other symptomatic patients. Although our results show a statistically significant reduction in predetermined primary outcome measures, it is difficult to determine the mechanism of action responsible for these benefits. It is of interest that in the pharmacologic trials of tramadol[28] and gabapentin,[26] the subjects with severe and extreme pain responded better than other subjects. Segal et al[61] also noted in testing bipolar magnetic devices in knee pain secondary to rheumatoid arthritis that patients with mild symptoms did not respond as well. DPN pain appears to arise from an increase in afferent signals from degenerating nociceptive afferent fibers. It has been shown that early in the course of painful neuropathies, free nerve endings of nociceptive axons can disappear from the skin but are still present in the sural nerve.[62] One possibility may be that the magnetic field of these insoles somehow directly or indirectly interrupts and suppresses the afferent signal traffic of the C-fiber firing pattern of the distal part of the surviving axon thereby producing an antinociceptive effect. A number of studies have shown that DPN pain could result from depolarization because of dysregulation of normal sodium,[17-19,63] calcium,[23,64] and potassium[20] channel activities. It is well known that sodium channels accumulate in areas of axonal damage[63] and static magnetic fields have been shown to block or reduce action potential via effects on sodium flux.[65-68] A number of studies using weak pulsed, time-varying electromagnetic fields have shown biologic changes.[69-73] Adey and Chopart[74,75] considered the cell membrane as the most likely transducer modifying ion transport of protein and adenosinetriphosphatase activity. Membrane lipids with organized arrays of polar molecules, diamagnetic, have been shown to realign anisotropic molecules as well as to summate and interfere with ionic transport.[76,77] Translational movement or changes in orientation in a magnetic field can influence amplitude of evoked responses.[78,79] Because phospholipids in cell membranes have both diamagnetic and paramagnetic properties, it is clear that mechanisms exist that can produce conformational changes in various channels and structures.[80,81] However, it is not known if any of this is pertinent to putative biologic effects of static magnetic fields. Based on our data, we speculate that the kinetic activity of channelized membrane ions and blood flow in a static magnetic field is sufficiently strong to stimulate living tissues and to induce a biologic reaction. Signal transduction pathways appeared to be functionally modulated, and this is a restatement of Faraday's law of time variation.[70,82,83] It is also known that weak magnetic fields can increase the partial pressure of tissue oxygen, thereby improving oxygen delivery to tissues.[84] This property may be important because of a reported reduction in endoneurial oxygen tension in DPN.[85] Thus, it is biologically plausible

that static magnetic fields influence diabetic neurons and cell membranes of cutaneous nociceptors by amplifying the weak electromagnetic signals from the imposed and constant static magnets, thereby inducing changes in the cellular[86-88] and pericellular microenvironment.[89,90] Because these devices have a presumed penetration of up to 20mm—thereby indicating passage through the epidermal[91] and dermal layers, which contain a rich network of nerves and capillaries—we speculate that, at this site, there is inhibition and/or interruption of ectopic firing of the damaged small nociceptive afferent unmyelinated C fibers. The specific magnetic flux density at this target area is not known. Perhaps a gating response with simultaneous stimulation of the A delta fibers producing an inhibitory antinociceptive effect on C fibers occurs, compatible with Melzak–Wall hypothesis.[92] Another possibility includes the recruitment of previously passive C fibers.[93,94] Case IV studies of warm and/or cold thermal thresholds did not reveal any serial changes from baseline. Thus, at an ionic-membrane level, we can speculate that either the underlying sodium channels can be up- or down-regulated[95] or, alternatively, rapid repolarization occurs because of stimulation of the potassium internal rectifying channels.[64] This phenomenon may also produce a secondary inhibition of the firing from the DRG neurons.[23]

The major strengths of the present study include randomized, placebo design; the cooperative involvement of neurologists, podiatrists, and diabetologists; and the geographic and racial diversity of the study population. These factors suggest that the observed benefits will be applicable to the general diabetic population. Because pain levels can vary during the day, patients recorded their score 3 times daily to best derive a mean daily discomfort level and to reduce recall bias. Similarly, QOL experiences have yet to be standardized and validated by large cohorts in DPN[34]; yet, intuitively, quantification of exercise-induced foot pain and sleep disturbance represents important functional outcome measures.[96,97] Another strength is the utilization of both academic and private practice centers that not only showed good interobserver reliability, but also reduced the likelihood of selection bias.

Despite this provocative data, several limitations exist. We relied exclusively on patients' self-report for pain and outcome.[55,98] Despite favorable statistical reduction of neuropathic pain and QOL scores by wearing these devices, only modest clinical improvement was achieved. The slopes of our figures from months 2 to 4 suggest that a more potent clinical benefit could be anticipated at 8 to 12 months, and, thus, long-term studies must be performed. Another limitation was that it is a physical impossibility to blind these foot devices and to prevent the determination of magnetic activity. Subjects and investigators were advised of the importance of maintaining the blind, and the questionnaire at study termination indicates that both groups remained blinded.[99,100] Unfortunately, we were unable to identify a biologic marker using QST, SSR, and biothesiometry. None of the limitations invalidates the statistical antinociceptive effects. Intraepidermal nerve fiber density measurements were not performed and may have provided a useful pathologic correlate.[101] It has been shown that regeneration of nerve fibers can occur within 39 days in the dermis after an injury and after 4 months in the epidermis.[102,103] The observation that both refractory groups improved with lower VAS scores by 2 months compared with baseline by wearing foot devices (magnetized, unmagnetized) is provocative and similar to that seen in pharmaceutical studies and placebo trials; this suggests either a placebo response or analgesic benefit induced by foot pressure. It is possible that central regions of the brain for pain control (ie, rostral anterior cingulate cortex, brainstem) were somehow activated.[29]

CONCLUSION

Although many questions remain about a precise mechanism of action, the present study provides convincing data confirming that the constant wearing of static, permanent, magnetic insoles produces statistically significant reduction of neuropathic pain. Considering their safety and minimal cost (<$100), our data suggest that the insoles may be used as adjunctive or monotherapy. Future studies are needed to identify the optimal time to achieve maximum antinociceptive effect and to confirm and extend these results. Additional search for biologic markers (ie, epidermal nerve fiber biopsy, microneurography) will be necessary in future protocols to determine if permanent structural changes can be produced.

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Suppliers

a. MMT-6J04-VH; Magnet-Physics Inc, 770 W Algonquin Rd, Arlington Heights, IL 60005.
b. Nu-Magnetics Inc, 6 N Wind Dr, Port Jefferson, NY 11777.
c. Nikken Inc, 52 Discovery, Irvine, CA 92618.
d. Neurotron Inc, 1501 Sulgrave Ave, Ste 203, Baltimore, MD 21209.
e. Version 10.0; SPSS Inc, 233 S Wacker Dr, Chicago, IL 60606.

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For Your Information

My purpose in life is to facilitate the body's natural ability to heal itself. I get so involved with the health of my patients that every practitioner I have personally visited has remarked about it.

I have focused most of my attention on this most worthy endeavour. To enhance my efforts, I invite your comments and input.

The courses I have taught, the lectures I have presented, the company I direct, the referral network I started, and now the book I have written are all instruments for that purpose.

Please contact me if you require assistance locating a qualified microscopist in your area. Contact me if you are a qualified microscopist and would like to join the Microscopist Referral Network (MRN). You can also contact me if you would like assistance locating an Independent Nikken Wellness Consultant in your area.

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