

HEALTH AND STRESS

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The American Institute of Stress*

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MORE ON "ENERGY MEDICINE" AND ITS CLINICAL APPLICATIONS

KEYWORDS: Symtonic LEET, Yujiro Ikemi, Elmer Green, Ross Adey, Descartes, photosynthesis, polarizing solution, Russell Dekker, *Bioelectromagnetic Medicine*

A recent Newsletter dealing with our understanding of bioelectromagnetic energies prompted several complimentary comments. However, some readers had difficulty wading through this. Many others could not understand why I had devoted an entire issue to this subject and what it had to do with stress.

One of the challenges in writing any Newsletter is crafting something that appeals to both health professionals and others with a basic science background as well as lay individuals who are not familiar with the terminology used to explain certain concepts or research results. Since I had obviously failed to achieve this balance in attempting to review what I consider to be an important topic, I thought it advisable to try to make another attempt in this issue.

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Perhaps the best way to begin would be to trace the development of my involvement in "electromedicine", which I suspect may seem strange. It is not my area of expertise and my introduction to it was serendipitous.

About twenty years ago, I was approached by a group of Swiss scientists to evaluate their Symtonic device for the treatment of insomnia and other stress related disorders. I was impressed by the extensive animal studies and pilot clinical trials demonstrating efficacy and safety, but had no clue as to what was going on.

The treatment utilized a Walkman type device that emitted electromagnetic waves to an antenna-like probe that was inserted into a nostril for 20-30 minutes three times a week. Double blind studies were easy to conduct since the magnitude of this signal was in the range of a CB radio. It was impossible to detect if the device was active or not since it produced no sensation or even any motion of a compass needle at the end of the probe. It was believed that this type of Low Emission Energy Therapy (LEET) achieved its beneficial effects by acting on the hypothalamus to dampen hypothalamic-pituitary-adrenal cortex axis responses to stress.

As a trained endocrinologist I was aware of medications that could do this at peripheral sites, like Inderal and other beta blockers that blunted the effects of cortisol and stress induced hormones. Electroconvulsive therapy was often used for the treatment of severe depression but the notion that a feeble electromagnetic force such as this could have significant physiologic effects was foreign to me. However, their results were indisputable and I wanted to know more about what mechanisms might be responsible.

Dr. Claude Rossel And The Biotonus Clinic

I felt that additional studies should be performed to demonstrate the effects of this Symtonic device on the hypothalamus and neuroendocrine function and outlined several research projects. It was clear that an electromagnetic signal from the antenna-like probe being used would reach the hypothalamus, but shoving this up the nose for 20 minutes did not seem to be an appealing or precise way to deliver therapy. During my Fellowship with Hans Selye some three decades earlier, I had utilized the technique he developed to remove a rat's pituitary gland in less than a minute. It involved exposing the roof of the animal's mouth and drilling a small hole where the soft and hard palate meet. The pituitary was readily visible, attached to the hypothalamus by a stalk, and could be readily removed.

Since these anatomical relationships were similar in humans, a wafer shaped electrode applied to the same site seemed to be a more esthetic approach. In addition, this might also achieve results that were not only superior but also more reproducible because of greater proximity to the target site and less chance of variation in positioning. Subsequent studies using a phantom skull developed at the University of Washington confirmed that this was correct.

Early clinical trials had been conducted by Dr. Claude Rossel, Executive Director of the Biotonus Clinic in Montreux. An M.D. with a Ph.D. in physics, he was an authority on the biochemistry of small brain peptides like the endorphins, which play a vital role in affecting mood, behavior, resistance to pain and responses to stress. He had previously been Director of Research at a Swiss

pharmaceutical company, but had received funding to establish a facility that would incorporate promising alternative medicine approaches with the latest advances that modern medicine could provide. He subsequently studied with Paul Niehans, the Swiss urologist who developed cellular rejuvenation therapy and had also investigated Anna Aslan's procaine therapy to delay or reverse the aging process.

Claude told me that he had a special interest in the role of stress in disease and invited me to serve as consultant to Biotonus and the Symtonic research program, which I gladly accepted. In 1985, he asked me to Chair a three day "Conference on Stress and Aging" being sponsored by Biotonus. He had attracted two Nobel Laureates and several other distinguished scientists as well as an array of obscure researchers working in disparate areas that seemed to have little relevance. However, as the conference unfolded, it became obvious that this was to provide a platform and forum for unorthodox studies that could be critically evaluated to determine whether any should be further explored for use at the Biotonus Clinic. These included hyperbaric oxygenation, with which I was familiar, but others like placental therapy that I knew little about save for its rich content of hormones and growth factors. Claude had already begun studies on the use of placental extracts in rheumatoid arthritis in conjunction with the University of Geneva where laboratory studies confirmed that they produced a significant increase in immune system responses as measured by rises in interleukin-2 and T-cell mitogenic activity.

The conference was stimulating and a huge success. Everyone learned something new that was of interest and Claude asked me to organize a similar event dealing with "Stress".

Our International Congresses On Stress

Our First Montreux International Congress on Stress in 1988 was a three-day event that was also held at the stately Five Star Grand Hotel Excelsior adjacent to the Biotonus Clinic. Claude Rossel had given me free rein and I followed the same format of an eclectic mix of distinguished scientists reporting on traditional stress research subjects and others whose presentations

dealt with unconventional approaches and topics. In regard to the latter, Björn Nordenström chaired a session that featured his concept of an "electrical circulatory system" and its successful use in the treatment of metastatic lung malignancies, Boris Pasche reported on the use of Low Emission Energy Therapy for the treatment of insomnia and anxiety with the Symtonic Device and Norman Shealy and Saul Liss presented their research on cranioelectrical stimulation effects on brain neurotransmitters and how this modality could alleviate depression more rapidly than drugs, and without any of their adverse side effects.

The Excelsior, famous for its cuisine and white glove service, is situated on Lake Geneva and every room has a commanding view of the French, Italian and Swiss Alps and Evian, directly across the lake. Faculty and registrants dined together and met in the main salon after dinner to renew old friendships and make new ones. This elegant but informal ambience fostered the development of dose personal as well as professional relationships and the response was so enthusiastic that I was asked to continue the Congress on an annual basis.

The International Montreux Congress On Stress quickly grew to a weeklong event and the "electromedicine" and "energy medicine" segments also expanded. Our Fourth Congress in 1992 honored Yujiro Ikemi for his attempts to integrate Oriental and Western medicine and featured the feats of *chi gong* healers, acupuncturists and other energy medicine practitioners. Most of us were surprised to see how Japanese scientists were using the latest sophisticated imaging and other technologies to study the nature of these strange energies that may lie dormant in each of us but are highly developed in certain individuals.

Elmer Green started the Psychophysiology Research Program at the Menninger Clinic in 1964 and subsequently founded the International Society of Subtle Energies and Energy Medicine (ISSSEEM) in 1990. His research has also focused on psychophysical phenomena and anomalous electric-field effects he had identified emanating from well-known "healers". Elmer was the recipient of our Hans Selye Award at our 1996 Congress, during which he

demonstrated that a healer's energy could produce changes of 80 volts or more in EEG tracings of a subject seated 10 feet away in an enclosed booth. This session also featured a comprehensive overview of "Scientific Evidence For Energy Medicine" by Dan Benor; several presentations verifying the therapeutic effects of specific types of music as well as "The Scientific Status of Aromatherapy" that documented its stress reduction effects.

Our Ninth Congress included two days devoted to Bioelectromagnetic Medicine and this was increased to three full days at our Tenth Congress, when we honored Dr. Ross Adey for his seminal research proving that **very weak electromagnetic forces could have powerful psychophysiologic effects**. Following Claude Rossel's untimely death and the sale of Biotonus Clinic, our last Congress was held in Hawaii. It also included three days on energy medicine topics such as **how electrical signaling in the body might explain placebo effects, why a firm faith and feeling of control may mediate remission in cancer and health rewards in other deadly diseases and a variety of other well acknowledged but poorly understood psychophysiologic phenomena**. Additional details on presentations at all of our Congresses can be found at our web site www.stress.org.

One of the unique features of these events was the ability to include presentations from scientists in Eastern Europe, Russia and elsewhere who could not participate because of financial constraints. In some instances, airfare alone would have consumed three months' salary. Dr. Rossel subsidized all expenses and provided funds for those I wanted to include but who could not afford to come. I will always be grateful for his courtesy and generosity.

Eastern, Western And Holistic Medicine

I am also indebted to Claude for giving me carte blanche with respect to the selection of speakers and subjects that were unrelated to his interests or those of the Biotonus Clinic. In that regard, while Biotonus was listed as one of the sponsors of the Congress in the program, there were never any advertisements or promotional

activities since he was insistent that these events should remain purely educational.

Biotonus was very successful and attracted royalty, celebrities and top executives from all over the world. Since most patients stayed at the Excelsior to facilitate their treatment, our Congresses were usually scheduled during the winter months when more rooms were available. (The weather was still quite mild and although skiing was readily available 20 - 30 minutes away, palm trees lined the lake.) Many of the rich and famous came because of the anti-aging programs that were offered and while I was skeptical about some of these, such as cell rejuvenation therapy, I tried to keep an open mind.

Others came because of the Biotonus stress reduction program and to take advantage of unique approaches that were offered such as the Symtonic device. Several had medical problems that had not responded to traditional treatments. In addition, Claude had a strong interest in incorporating preventive medicine in his overall treatment program that I enthusiastically supported. Such measures are often neglected or difficult to implement for reasons that deserve further explanation.

Western medicine has had its focus on a "sickness cure" rather than "health care" approach. We go to "health centers" for help when we are sick, not to promote health or prevent illness. What we call "health insurance" should really be referred to as "sickness insurance". This orientation was largely due to the influence of the 17th century French philosopher René Descartes, who viewed the body as a complex machine. Illness resulted when the machine broke down and the physician's function was to find the faulty part and fix it. This was best accomplished by knowing more about the smaller working parts.

Emotions did not affect the body's machinery and had nothing to do with physical illness. Mental disorders were beyond man's comprehension and the province of the church to be treated by priests not physicians. This mechanistic reductionistic model was bolstered by the discovery of bacteria that caused different diseases, the virtue of vaccinations, advent

of antibiotics and the identification of deficiency disorders due to insufficient intake of vitamins that could be prevented or cured by replenishing them. In short, all illness was due to an attack by some external pathogen or the lack of some vital nutrient.

In contrast, Oriental medicine does not distinguish between mind and body. Both emotional and physical illnesses were manifestations of an underlying energy imbalance that affected the entire organism. The ancient Chinese recognized the importance of proper nutrition, exercise, and avoidance of stress as the cornerstones of preventive medicine. An old aphorism stated that **"the superior physician cures before the illness manifests itself. The inferior physician can only treat the illness he was unable to prevent." Chinese doctors were traditionally paid to keep patients well rather than for treating their illnesses.**

Hippocrates and Aristotle similarly acknowledged the inextricably intertwined contributions of physical, nutritional, emotional, spiritual and ecological factors necessary to attain *euexia*, or optimal health. They believed that this depended on the balance between the four humors: blood, phlegm, black and yellow bile. These constantly circulated through the body and determined not only what diseases might be more likely to develop but also different moods or temperaments. We still refer to people as being sanguine, phlegmatic, choleric or melancholy (from the Greek *mélas chole* or black bile). Melancholy women were believed to be at increased risk for cancer of the reproductive organs and recent research has confirmed this link with depression. In Oriental medicine, the energy that flows through the body is *Qi (chi)* with its balancing components of *yin* and *yang* that seem similar to positive and negative electrical energy.

Where Does Our Energy Come From?

People who are very healthy are often described as being "lively" (full of life), "animated" (giving life to) or "energetic" (having an abundance of energy). But what is energy? What does it consist of and how does energy maintain life or promote health? For our purposes, whether it be heat, light or

electricity, the best definition is that **energy is the ability or the potential to do work. A cell is considered to be unhealthy if it does not have enough energy to do its normal work and therefore can not function properly.** The degree of disability depends on the degree of energy deficiency and death is the complete lack of energy. This applies to cells, tissues or people. Death in humans is usually defined as the absence of evidence of any electrical activity in the heart or brain based on ECG or EEG tracings.

What is the source of this electrical or other energy? Does it come from the environment; do we manufacture it - or both? Where is it stored, how is it used and how is it related to health? These intriguing questions are too complex to discuss at length without generating complaints that this Newsletter is also too complicated to read or that it has little to do with stress. However, it is important to explain the latter and at the risk of oversimplification, to supply some relevant background.

We usually think of energy in terms of the mechanical work it performs such as the hydroelectric energy supplied by water passing through dams that is converted into electricity, windmills that turn gears, or atomic energy from nuclear fission. "Energy" is derived from *érgon*, the Greek word for work. The prefix "en", meaning "at", gave rise to *energéo*, a noun used by Aristotle to signify something that was moving, or was active in some way. However, energy also includes the capacity for doing work and can exist in many different forms that have no relation to motion, or kinetic energy. Energy stored in a compressed spring or battery is referred to as potential energy. A mass held high, or a roller coaster car at the top of a loop has gravitational potential energy that is progressively converted to kinetic energy on its descent to earth.

Heat, light, and electricity are forms of energy that can be converted into mechanical energies that are either kinetic or potential. All of the energy on earth comes from the sun, either directly or indirectly. The sun radiates electromagnetic forces, light, and heat and it is the interaction between solar energies, oceans,

and the atmosphere that is responsible for the energy we harness from natural forces. Clouds produce rain to provide water in mountain streams that become rivers to generate hydroelectric power. Atmospheric forces similarly produce winds that turn windmills.

Solar energy is also responsible for the growth of plant life through photosynthesis, a reaction that converts light energy to chemical energy that can be stored for future use. Wood and fossilized fuels like coal provide energy when they are burned and alcohol or methane can also be extracted from plant life to provide fuel for energy. Virtually all the energy responsible for sustaining life also comes from photosynthesis that uses sunlight to power the synthesis of living plant cells from inorganic substances such as carbon dioxide, water, and ammonia. These form carbohydrates, fats and proteins that provide high sources of energy when they are ingested by animals. Our other major source of energy comes from eating meat and animal products. These contain the energy that has already been stored in the chemical bonds of fat, protein, and carbohydrates that also originally came from plants.

Now comes the tricky part. How does the chemical energy stored in plants and animals that we eat get converted into the electrical energy necessary to maintain health and life? The answer lies in a remarkable molecule called ATP (adenosine triphosphate) found in the mitochondria of all cells. This area is called the "powerhouse" of the cell because it is where the enzymatic breakdown or metabolism of nutrients like glucose is converted into the high energy phosphate bonds of ATP. **Since the energy for cellular functions comes from the energy stored in ATP, the health of every cell depends on its ability to constantly manufacture and utilize this compound,** which brings us to the next part of this story.

Sodi Pallares, ATP And The Sodium Pump

I first became acquainted With Demetrio Sodi Pallares over 40 years ago when Hans Selye was studying the role of

stress in myocardial infarction in experimental animals. Selye had discovered that pretreating the animals with a high salt diet or administering adrenal hormones that caused sodium retention resulted in much higher death rates. However, potassium had a protective effect. Demetrio, a Mexican cardiologist subsequently came to the same conclusion and his clinical results in preventing and treating heart attacks were so impressive that Selye filled all his salt shakers with potassium chloride since he was convinced it could help prevent a coronary.

Demetrio had noted that in an acute heart attack there was a small central zone of dead cells surrounded by an area of severely injured cells that would die unless they received nourishment. The damage lessened progressively in the periphery of this section that gradually merged into a larger zone where there was less structural damage. Although function was impaired compared to adjacent normal tissue, these abnormalities were reversible.

He subsequently demonstrated in experimental animals that there was a clear and consistent correlation between the degree of damage and increased intracellular concentrations of sodium as one progressed through these three zones to healthy muscle cells, whose sodium content was low. Did these changes in sodium simply reflect the degree of damage or was it increased intracellular sodium that was causing the problem? His studies confirmed Selye's observations that sodium magnified the damage seen in experimental heart attacks in animals and that potassium had the reverse effect. He later showed that just as increased intracellular sodium correlated with the degree of damage, so did a reduction in levels of intracellular potassium.

In healthy cells, intracellular sodium was low and potassium was high but this ratio was just the opposite in the fluid outside the cell membrane. **This meant that there had to be some mechanism that constantly pumped sodium out of the cell but kept potassium in.**

Since the energy for this could only come from ATP, Demetrio, reasoned that when the cell membrane was damaged

sodium poured into the cell and that ATP production was hindered by this increased sodium. He found that he was able to correct this by the intravenous administration of a concentrated solution of glucose containing potassium and insulin. Insulin forces glucose into the cell along with potassium so that sodium is driven out. As ATP production is restored the cell progressively resumes its normal functioning.

During the 1960's, I and many other cardiologists routinely administered this "polarizing solution" to all our acute heart attack patients as soon as possible, since it clearly reduced complications like shock, rhythm disturbances and congestive failure as well as duration of hospitalization. Its popularity began to wane with the development of powerful pressor agents to treat shock, diuretics to get rid of excess fluids and drugs to treat all kinds of arrhythmias, all of which were aggressively promoted by pharmaceutical companies. However, polarizing solution is still routinely used during cardiac bypass and transplant procedures to maintain the integrity of the heart and a multi-center research study recently confirmed that it remains the most cost effective treatment for acute heart attacks.

Demetrio subsequently discovered that the application of an electromagnetic field with certain characteristics could also increase ATP production. More importantly, he found that this could markedly potentiate the effects of his polarizing solution. When these two modalities were combined he found that he could achieve remarkable benefits not only for injured cardiac tissue but also in cells damaged by other disorders, including cancer. As demonstrated at our Congresses and described in previous Newsletters, **he was able to reverse severe metastatic bone disease in terminal cancer patients, many of whom were able to return to normal life with no evidence of disease years later if they continued their treatment. Patients with end stage cardiomyopathy who would be dead in a month without a heart transplant were well a year later with no evidence of heart enlargement.**

Is There An Energy Circulatory System?

Björn Nordenström, M.D., Ph.D., also has impeccable credentials, having served as head of the Department of Radiology at Karolinska Hospital and Chairman of the Selection Committee that picks the Nobel Laureate for Physiology of Medicine. He is famous for having developed the "skinny needle" technique for biopsies used by most surgeons and radiologists around the world. About four decades ago, he became intrigued by what appeared to be a halo around malignancies on routine chest X-rays that was not present with benign tumors. He showed a series of these to colleagues who had also occasionally noted this but assumed they were artifacts.

Björn's subsequent detailed animal experiments led him to conclude that the body had a complex electrical circulatory system and that malignant tumors had different electrical characteristics from surrounding normal tissue. He found that inserting his skinny needles into these two areas and using them as electrodes to supply weak DC current to correct this electrical imbalance destroyed the cancer tissue. The procedure was painless and took only a few hours. **At our 1998 Congress, he showed two patients with inoperable pulmonary metastases from cancer of the ovary and breast who were well with no evidence of tumor 10 and 12 years later.**

Presentations by Ross Adey, Boris Pasche, and others also revealed that extremely weak environmental energies could have powerful psychophysiologic effects despite the absence of any detectable caloric exchange. Rollin McCraty subsequently demonstrated that energies of a similar magnitude that were generated internally by the heart and brain also had important biological effects that could not be explained by thermodynamic laws that mandate evidence of some heat exchange for all chemical and physical reactions.

A new model of communication in the body is emerging based on electromagnetic signaling and the recognition that the cell wall is not merely a protective shield that regulates ionic flow in and out of the cell but also functions as a powerful signal amplifier.

The current "key-keyhole" theory of communication proposes that small chemical messengers circulating in the blood reach distant receptor sites on cell walls where they fit much like keys in a specialized lock. This kind of random physical contact encounter would take some time and could not explain the numerous instantaneous reactions that occur all over the body during "fight or flight" responses to severely stressful situations. In addition, when a molecule does reach a receptor site its message is ultimately transmitted to the interior of the cell via a weak electrical signal.

There is good evidence that such receptors may also be stimulated by feeble environmental electromagnetic forces as well as those generated internally. **Thus, EEG and ECG waves may not merely reflect the noise of the machinery of the brain or heart but signals being sent to various specific sites in the body that are "tuned in" to receive them.** It is well established that molecules emit specific frequencies and that such electromagnetic signals can travel long distances to affect other molecules that resonate at the same frequency.

This could explain a variety of widely acknowledged but poorly understood phenomena such as the placebo effect, the role of a strong faith in spontaneous remission in cancer and other deadly diseases, the power of therapeutic touch and prayer as well as acupuncture and the possible link between emanations from high power lines and cell phones to cancer and birth defects. Multiple reactions could also occur immediately and simultaneously, much as FM, AM and short wave radio receivers have specific bands that receive only certain stations.

Congress presentations from Jacques Benveniste, Bill Tiller, and others support such concepts. At our last Congress, Tiller showed how mental energy in the form of "intentionality" could influence the pH of a solution as well as the maturation time of fruit fly larvae. In addition, this force could be stored on a computer chip to be used at a different time and location to produce the same effects. These and other advances will be featured in a new book entitled *Bioelectromagnetic Medicine*.

Separating The Wheat From The Chaff As Well As Hype From Hope

I was visited last year by Russell Dekker, Chief Publishing Officer of Marcel Dekker, Inc. to see if I would be interested in serving as editor for a book dealing with clinical aspects of bioelectromagnetic medicine. He was anxious to include chapters updating Congress presentations as well as foreign studies that were not well known in the U.S. I explained that although very interested in this topic it was not my area of expertise and that a physicist would be more appropriate. Russell said that he wanted a practicing physician as editor and had been referred to me and I agreed to accept the assignment provided that Dr. Marko Markov could be co-editor. Marko is a highly respected physicist, a good friend, and very familiar with relevant research and scientists in Eastern Europe, Russia and the Orient. We listed some thirty topics that we felt should be included and tried to limit these to evidence based medicine that could be supported by references in peer reviewed publications. We were able to attract luminaries in the field from leading medical centers here and internationally, all of who were enthusiastic about participating in this project and agreed to adhere to our very strict requirements and deadlines.

Multi-authored works such as this often take two or more years to publish but Marcel Dekker, Inc. is family owned and Russell promised to give this top priority. *Bioelectromagnetic Medicine* should be available in a few months, even though we now have fifty chapters because of heightened interest in this

work. **These include dramatic breakthroughs in the treatment of far advanced metastatic malignancies, pancreatic cancer, terminal cardiomyopathy, headache and other pain relief, macular degeneration, obesity, insulin resistance, depression, epilepsy, multiple sclerosis, tinnitus, degenerative disk disease, insomnia, anxiety, incontinence, soft tissue and bone healing, paralysis, Parkinson's disease, dystonia and other movement disorders.** Bioelectromagnetic approaches have proven to be successful in patients resistant to standard therapy as well as much safer and more cost effective than drugs.

Unfortunately these authentic and cutting edge advances are apt to be drowned out by worthless devices offered by entrepreneurs who prey on the desperation of patients suffering from debilitating disorders. Numerous web sites make extravagant claims for curing cancer and every other conceivable disease that are supported only by anecdotal reports. In contrast to the chapters noted above, there are no scientific studies to review and no credible mechanism of action to explain any benefits. Although there is little that regulatory agencies can do to curtail this, Zoetron pulsed magnetic field therapy for cancer being offered in Tijuana by a Canadian company for \$15 - \$20,000 was recently shut down as a result of joint efforts by Mexican, Canadian and U.S. officials. Bioelectromagnetic Medicine explains how to identify similar frauds and a Table of Contents is available at www.dekker.com/servlet/product/productid/4700-3.

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