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Crucial to Health and Longevity

By Tim Guilford, MD

Glutathione is known to be a critical component of both the antioxidant and detoxification systems. Glutathione is a tripeptide, a naturally occurring protein that is composed of three amino acids: glycine, glutamine and cysteine. It is made by every cell in the human body and it plays a part in the function of every cell in the body. Glutathione also contains a sulfur molecule. Sulfur plays a major role in glutathione's antioxidant and detoxification functions, and it also gives glutathione its distinctive sulfurous aroma.

Powerful Antioxidant

While vitamin C and vitamin E are better known, the ability of glutathione to work with enzymes makes it the more reliable antioxidant workhorse for the human antioxidant system. When nutrients are discussed, the topic of oxidative stress frequently comes up. Oxidative stress refers to the changes that occur in the biochemistry of molecules in the body when they interact with oxygen. In the outside world oxidative stress shows up as rust. Inside the body, oxidative stress is harder to visualize, but it causes damage to cells and the membranes of cells.

Without adequate glutathione function, oxygen metabolism in the energy producing sites in the cell called mitochondria can form an increased number of free radicals. Free radicals are electron "hungry" and will pull electrons from surrounding structures such as proteins or membranes, causing them to stop functioning normally. When this happens it is called "free radical damage" which will cause a decrease in the function of the cell. Free radicals must be neutralized or this "rust" will cause cells to perform poorly or die. Accumulation of damage to cells leads to problems in entire organs and eventually disease. Illnesses such as the Chronic Fatigue Syndrome may be related to decreased energy production from individual cells.¹¹ Glutathione is one of the major defenders against oxidative stress. In its "reduced" (active) form it can donate an electron and behave as an antioxidant. After losing an electron, it becomes non-functional, or "oxidized". The ratio of reduced to oxidized glutathione in cells is a measure of oxidative stress. Studies have shown that oxidative stress increases with aging and it is no wonder that over time free radicals can lead to degenerative diseases: heart disease, memory problems, cancer, diabetes, arthritis.

The discovery and path of understanding of glutathione began in 1888, culminating in 1926 when its structure was finally determined.¹⁻² Glutathione is so important to the utilization of oxygen in our bodies that is difficult to write about oxidative stress without mentioning it, so glutathione shows up often in the scientific literature. In 1999 a single-word search on glutathione pointed out that 40,000 articles were found in the government library under the search term "glutathione."³ In the past ten years, this number has more than doubled and is now over 87,000 references. The numbers of research articles show that research into the role that glutathione plays in maintaining cell function is ongoing and important.

In certain disease conditions, glutathione does not get manufactured as efficiently as needed. The lack of glutathione can result in disease conditions from a systemic decrease as we see in atherosclerosis. Glutathione can also be deficient in local tissues as has been shown with asthma.⁴ In situations where there is a lot of oxidative stress, as occurs in diabetes that is not well controlled, glutathione is not formed and becomes deficient even when the building block amino acids such as cysteine are abundantly available.⁵

The Great Detoxifier

Glutathione is also known as a detoxifying agent. Most toxins are able to pass through fatty membranes, so they tend to accumulate inside of cells. Binding toxins with glutathione makes the combination water soluble and allows its removal.

The liver harbors the most concentrated source of glutathione because it is the organ of detoxification. Your body uses glutathione to protect you from pollution, radiation, drugs, carcinogenic chemicals and heavy metals. Modern living even exposes us to toxins in our water and food. Dealing with this onslaught is especially difficult for people with certain neurological conditions such as autism, because they have difficulty ridding their bodies of toxins.

Glutathione has the ability to bind with toxins directly, especially if the correct type of matchmaker enzyme is present. About 10-30 percent of the population will not have this enzyme that enhances glutathione function⁷, and in these cases increasing the presence of glutathione may help increase the chance of a GSH molecule matching up with a toxin.

Toxins such as mercury are removed from the body by direct conjugation with glutathione.⁸

Glutathione can attach to metals and other toxins directly and there is an extensive list of biochemicals that can be bound to glutathione.⁹ Once bound to glutathione, toxins become water soluble and can be transported out of the cell and out through the liver for excretion. Maintaining normal bowel flora and a high-fiber diet is important during detoxification to prevent the reabsorption of toxins like methyl mercury from the bowel.¹⁰ Other toxins, such as those produced from molds or fungus called mycotoxins have also been shown to cause an increase in oxidative stress and will also deplete glutathione. With all the roles that glutathione plays, it is easy to see why there are so many articles written about glutathione in the medical science literature.

Glutathione and Disease

We have already mentioned several health conditions in which glutathione plays a role. In addition, studies have shown that alcoholics have low glutathione and so do people with Alzheimer's disease. Cigarette smoking depletes glutathione, and children with autism are predisposed to low glutathione so they cannot detoxify normally. Glutathione is suggested as a promising treatment to combat the oxidative stress found in HIV-infected people. Long-lived women have high levels of glutathione, and people with Parkinson's disease often benefit from treatment with glutathione. It also is

posited that the oxidative stress that depletes cells of glutathione increases vulnerability to influenza.

Because heart muscle requires a lot of energy for its continual function, it has the largest number of mitochondria per cell of any tissue in the body. It would be logical to expect that glutathione is also needed in the heart muscle cells to maintain function. It turns out that studies have shown that a deficiency of glutathione is correlated with the recurrence of heart problems after heart attacks.¹² It has also been shown that low glutathione is associated with the progression of coronary artery disease even in healthy adults.¹³

Liposomal Glutathione

Recent developments with a liposomal form of glutathione, suggests that wrapping glutathione in a tiny lipid bubble called a liposome is an excellent way to keep glutathione stable and make it available for use in cells.⁶ A liposome is an extremely small (1/2 the width of a human hair) bubble, which is also called a vesicle. Liposomes have a fat-soluble exterior and an interior that is watery. This watery interior can combine with water soluble materials such as glutathione.

Liposomes are made from the same type of material as our cell membranes, phospholipids. Because they are made of the same type of material as our cell membranes, liposomes penetrate mucosal tissues allowing for rapid release into the blood stream. Nutrients that are not in liposomes have to pass through the stomach to reach the liver where they are metabolized and released into the bloodstream. Some nutrients are destroyed or compromised by stomach acids. Liposomes avoid the digestive system by penetrating the mucosal tissue.

Laboratory testing shows that the liposome can maintain glutathione in the biochemical "reduced" state, the state that means it is active and can donate an electron as an antioxidant. In an animal study, Liposomal Glutathione was able to maintain the function of glutathione allowing the scavenger cells to metabolize cholesterol and slow the deposition and progression of plaque in the arteries.¹⁴ The study also shows that glutathione teams up with an antioxidant enzyme called glutathione

Liposomal Glutathione, now available as a dietary supplement, is a promising way to obtain a crucial antioxidant that has a wide role to play in health

peroxidase to prevent LDL cholesterol from becoming oxidized LDL (oxLDL). OxLDL has been shown to be correlated with the progression of atherosclerosis¹⁵ and is also elevated in metabolic syndrome.¹⁶

Further studies will be needed before a definitive statement can be made about the role that glutathione plays in maintaining normal function in the cells lining arteries.

Liposomal Glutathione, now available as a dietary supplement, is a promising way to obtain a crucial antioxidant that has a wide role to play in health. \blacklozenge

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NU SKIN SCIENTISTS IDENTIFY ADDITIONAL FREE RADICAL GENERATOR

Activity of Enzyme on Skin Cells Correlates with Age

KYOTO, Japan—May 14, 2008—New research funded by Nu Skin Enterprises on internal causes of aging has identified a previously unknown source of superoxide free radicals. Free radicals from external triggers, such as sun exposure and cigarette smoke, have long been known to damage skin cells and components of the skin's extracellular matrix, including collagen and elastin.

Scientists from Nu Skin Enterprises and Purdue University report their novel research findings on age-related NADH oxidase (arNOX) this week in Kyoto, Japan, at International Investigative Dermatology 2008 (IID2008), a major scientific venue for the latest information on skin biology. The scientists present compelling evidence that arNOX, an enzyme associated with cell membranes, is present and active on skin cells. Significantly, arNOX activity may begin to increase sometime during the mid-thirties and has been shown to increase during the "aging" years.

"Identifying skin-associated arNOX and its increasing activity with age is a breakthrough discovery in understanding skin aging," said Zoe Diana Draelos, M.D., primary investigator with Dermatology Consulting Services, member of the Nu Skin Scientific Advisory Board, and one of the study authors. "Currently, most dermatological research focuses on correcting skin damage after it occurs. Identifying an internal source of free radicals in skin, and advancing an understanding of how and why they are generated, adds to our ability to address fundamental mechanisms that may combine with external sources that may lead to accelerated skin aging."

"Evidence of arNOX in the skin provides further insights into potentially revolutionary therapies for skin care, particularly because its activity correlates with the ages when people begin to see their skin lose its elasticity and firmness, and notice more discoloration and lines and wrinkles," remarked Helen Knaggs, Ph.D., vice president of Nu Skin global research and development. "If we can develop innovative ways to inhibit arNOX activity and prevent the production of free radicals in the first place, then we can address both sides of the equation correcting free radical damage from external sources, while at the same time preventing free radical production from internal sources."

Authors of the study are Dale Kern, senior scientist for Nu Skin Enterprises; Dr. Draelos; Dorothy Morré, Ph.D., professor of foods and nutrition, Purdue University; and D. James Morré, Ph.D., Dow distinguished professor of medicinal chemistry, Purdue University. Nu Skin has funded ENOX research by the Morrés since 1999.

About arNOX

The arNOX enzyme is one in a class of newly identified ECTO-NOX (external NADH oxidase or ENOX) proteins that are located on external cell membranes. ECTO-NOX proteins become increasingly active to generate additional metabolic energy as cell mitochondria age and produce less energy. arNOX has been identified in all cells tested, including serum and saliva and now the dermis and epidermis. Its unique property is that it generates superoxide at the cell surface that is capable of damaging adjacent cells, lipoproteins, and other structural components of the skin's extracellular matrix, such as collagen and elastin. Other NOX categories include tumor-NOX, viral-NOX, and constitutive, or normal, NOX.



About IID2008

IID 2008 is the fifth joint meeting of the Society for Investigative Dermatology (SID), the European Society for Dermatological Research (ESDR), and the Japanese Society for Investigative Dermatology (JSID). IID2008 is hosted in Kyoto, Japan, May 14–17, and is the only major venue this year for the presentation of the latest information on skin biology and skin diseases. The conference program is widely based on any of the basic and clinical dermatological fields.

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The American Academy of Anti-Aging Medicine (A4M) created the anti-aging medical movement in 1992, which has since garnered the support of numerous prestigious educational and professional organizations around the world. The American Academy of Anti-Aging Medicine (A4M) wishes to acknowledge the following organizations that have facilitated the global acceptance and availability of anti-aging medicine.







Matural

Breast Augmentation with Body-Jet, Water-Jet Assisted

Liposuction Todd K. Malan, M.D. Cosmetic Surgeon Scottsdale, Arizona

Cosmetic Surgeon Scottsdale, Arizona

A revolutionary new liposuction technology, Body-Jet, has been introduced that provides a novel approach to removing fat. Body-Jet utilizes a gentle and controlled sequence of pulsed sprayed saline to dislodge mainly intact fat cells. This exciting aspect of the Body-Jet affords physicians the ability to remove viable fat cells, which can be immediately used for fat transfer to other parts of the body including the breasts. I have pioneered a procedure, the Natural Breast Augmentation, which employs the latest technologic advances in fat harvesting, adult stem cell transfers and breast splinting technology to provide women the option of enlarging their breasts using their own fat without the use of un-natural implants.

Autologous fat transfer for breast augmentation and reconstruction has remained a highly debated and controversial procedure following the introduction of these techniques in the U.S. in the late 1980's. Concerns regarding poor graft, survival, calcifications, liponecrotic cysts and obscuring mammography had relegated this procedure to little more than a historical footnote. Recent advances in fat harvesting and transfer techniques, digital mammography, and the use of adipose derived adult stem and regenerative cells necessitate a re-examination of this longstanding bias against fat transfer breast augmentation.

Free fat for correction of body contours is well accepted and considered an excellent technique. Since fat has a higher viscosity than normal saline with a similar texture and feel as normal breast tissue, it seems logical to replace saline with autologous liposuction fat. One of the major advantages in using autologous fat as the fillant is the avoidance of other controversial material. Since the fat is confined, theoretically the implanted fat will not be subjected to body inflammation and fibroblastic infiltration. Therefore, fibrotic changes and calcification are limited, if not eliminated.

Fat harvesting and collection is accomplished with a standard setup of liposuction utilizing saddlebags, love handles, lower abdomen, buttocks and medial thighs for sites of fat donation. My personal preference is to use the Body-Jet, water-jet assisted liposuction technology. Until now, the recovery of fat from liposuction patients has been a laborious process, involving centrifuges and prolonged time to 'process' the fat before use for injection. A process which in the past would have taken weeks can now be done in a single office visit. While traditional liposuction basically destroys fat cells, the Body-Jet loosens fat without requiring impact on the fat cell itself. It uses a gentle jet of water to navigate through the internal tissue, a process which until now, required manual force from the surgeon.

One of the most unique aspects of the Body-Jet is its AquaShapeFT™ LipoCollector which is suitable for the collection of fat intended for reinjection. During the procedure, to help protect fatty cells from pressure, the suction force of the liposuction system is lead through a bypass. Cell material and fluid are separated quickly and gently by buoyancy and gravity while individually chosen mesh filters complete the separation process. While the cell material is collected inside the container, the fluid is lead further to the waste bag. The LipoCollector separates fat and fluid instantly after aspiration. The container remains on the sterile instrument table and does not have to be opened. By means of a cannula, the fat can be taken out from the container without opening the lid, thereby limiting air contact.

The Natural Breast Augmentation procedure is unique in that we utilize the latest technologic advances in fat harvesting as well as adult stem cell transfers. Cell-enhanced reconstruction uses adipose fat that is a rich source of stem and regenerative cells. These stem cells are not the controversial embryonic stem cells. Soft tissue transplants have been done for many years, but this new procedure uses a special process to ensure that the transplanted cells will live and adapt to the transplantation site. The process was developed by Cytori, and uses a machine called CelutionTM System EU.

After fat removal with the Body-Jet, the cells are transferred to the Cytori Celution System which is used to separate regenerative and stem cells from fat cells. The regenerative and stem cells are then washed and concentrated. The concentrated stem cell mixture is then combined with the fat cells and then injected into fat that is already present in the breast where it fills in and replaces tissue volume.

The injection of the fat along with the stem cells results in a permanent 250cc to 500cc overall breast size increase, allowing for a 1 or 2 bra cup size increase. A pressure splint is then used after the procedure to ensure that the fat remains in place and assists in promoting regeneration of the transferred fat and stem cells.

There are several advantages to Natural Breast Augmentation. Saline



or silicone implants which are considered the standard for cosmetic breast augmentation and reconstruction show complication rates to be as high as 25% with a re-operation rate of 100% at 10 years. Additionally, implants can obscure 15-50% of normal breast tissue on screening mammography making early detection or follow-up of cancer difficult.

Autologous tissue does not exhibit reactive inflammation, rejection, or autoimmune disease. Natural Breast Augmentation illicits an excellent cosmetic result including a natural feel to the breasts that is reproducible and permanent. There is abundant fatty tissue available at no extra cost. Unlike implants this procedure will not interfere with future mammograms. The procedure, performed in conjunction with water-jet assisted liposuction allows artistic body re-contouring to complement breast augmentation for a new total-body look. \blacklozenge

Dr. Todd K. Malan is an honors graduate of the University of Arizona College of Medicine. Dr. Malan is the founder of the Innovative Cosmetic Surgery Center in Scottsdale, Arizona. The goal of this center is to evaluate emerging technological advances in minimally invasive cosmetic surgery techniques for the purpose of furthering academic knowledge and to provide physician training. The center and its affiliate physicians have been instrumental in the development of new techniques of improving fat transfer, the use of fat derived stem and regenerative cells and the use of minimally invasive laser techniques to replace invasive traditional cosmetic procedures. Dr. Malan is a member of the American Academy of Cosmetic Surgeons, and founding member of the American Academy of Cosmetic Physicians.

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Conference *Program*

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THURSDAY, DECEMBER 10, 2009

AESTHETIC MEDICINE: BEAUTIFUL SKIN FROM THE INSIDE OUT USING SMARTSKIN AND SMARTLIPO MPX

Presented by Cynosure Time: 1:00 pm - 2:00 pm Speaker: **Stephen Mulholland, MD** Room: Islander Ballroom - Room i

AESTHETIC MEDICINE: SUCCESSFULLY INTEGRATE CUTERA'S AESTHETIC SOLUTIONS INTO YOUR BUSINESS

Presented by Cutera Time: 2:00 pm - 3:00 pm Speaker: **Shelena Lalji, MD** Room: Islander Ballroom - Room i

AESTHETIC MEDICINE: SKIN REJUVENATION, SKIN TIGHTENING AND HAIR REDUCTION WITH ENDYMED PRO AND SMOOTH-COOL HR/SR

Presented by Eclipse Time: 3:00 pm - 4:00 pm Speaker: Todd Malan, MD and Tomoyuki Takahashi, MD Room: Islander Ballroom - Room i

AESTHETIC MEDICINE: BODY-JET LIPOSUCTION AND STEM CELL FAT GRAFTING

Presented by Eclipse Time: 6:00 pm - 7:00 pm Speaker: **Todd Malan, MD** Room: Islander Ballroom - Room i

ABSORPTION OF ORAL GLUTATHIONE AND IMPLICATIONS FOR HUMAN HEALTH

Presented by Kyowa Kako Time: 6:00 pm - 8:00 pm Speaker: Toshi Kamiya, PhD, Lise Alschuler, ND, FABNO, Hyla Cass, MD, Harry B. Demopoulous, MD, Dean P. Jones, PhD and John P. Richie, PhD Room: South Pacific Ballroom - Room i

HOW TO BE A SUCCESSFUL CASH BASED MEDICAL PRACTICE: BECOME A HOLTORF MEDICAL GROUP PHYSICIAN. EXCEPTIONAL OPPORTUNITY FOR EXCEPTIONAL PHYSICIANS

Presented by Holtorf Medical Group Time: 6:00 pm - 7:30 pm Speaker: **Kent Holtorf, MD** Room: South Pacific Ballroom - Room j

EFFICACY, SAFETY AND PATIENT PREFERENCE OF TESTOPEL IMPLANT AS COMPARED TO PAST MODALITIES OF TESTOSTERONE REPLACEMENT THERAPIES IN HYPOGONADAL MEN- INTERIM RESULTS

Presented by Slate Pharmaceutical Time: 6:00 pm – 9:00 pm Speaker: **Jed Kaminetsky, MD and Betsy Moclair, RN** Room: Islander Ballroom – Room h

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Presented by University Compounding Pharmacy (UCP)

HOW TO OPEN A TURN KEY WEIGHT MANAGEMENT PROGRAM Time: 6:00 pm - 6:30 pm Speaker: *Kim Ruby, CN*

Room: Bayside Hall – Room a
ANTI-AGING'S MOST POTENT ANTI-OXIDANT YOUTH JUICE

Time: 6:30 pm - 7:00 pm Speaker: *Makena Marangu, MD* Room: Bayside Hall - Room a

COMPLETE BODY & BRAIN MAPPING INTERACTIVE WORKSHOP

Presented by Path Medical Time: 6:00 pm – 9:00 pm Speaker: **Eric Braverman, MD** Room: South Pacific Ballroom – Room d

A PRIMER OF NATURAL THERAPEUTICS: AN INTRODUCTION TO DIETARY SUPPLEMENT COUNSELING

Presented by Natural Clinician Time: 6:00 pm – 9:00 pm Speaker: **Stephen Holt, MD, PhD, LLD, ND** 3 Hours of CME Credits Available Room: South Pacific Ball room – Room c

FRIDAY, DECEMBER 11, 2009

AESTHETIC MEDICINE: THE COMPLETE AESTHETIC ANTI-AGING PRACTICE

Presented by Sciton Time: 1:30 pm – 2:30 pm Speakers: Patrick Bitter Jr., MD Room: Islander Ballroom – Room i

AESTHETIC MEDICINE: FRACTIONAL CO2 RESURFACING

Presented by Alma Lasers Time: 3:00 pm - 4:00 pm Speakers: **Ed Zimmerman, MD** Room: Islander Ballroom - Room i

• NETWORKING RECEPTION AND FELLOWSHIP PINNING CEREMONY: WE INVITE YOU TO JOIN US FOR COCKTAILS AND HORS

D'OEUVRES IN THE EXHIBIT HALL The Fellowship Graduates pinning ceremony will take place on the main stage in the Exhibit Hall at 6:30pm Join Like-Minded, Anti-Aging Professionals for this Networking Opportunity Time: 6:00 pm – 7:30 pm Room: Exhibit Hall

HOW TO BE A SUCCESSFUL CASH BASED MEDICAL PRACTICE: BECOME A HOLTORF MEDICAL GROUP PHYSICIAN. EXCEPTIONAL OPPORTUNITY FOR EXCEPTIONAL PHYSICIANS

Presented by Holtorf Medical Group Time: 7:30 pm – 9:00 pm Speaker: **Kent Holtorf, MD** Room: South Pacific Ballroom – Room i

NUTRITIONAL APPROACHES FOR ANTI-AGING AND HOW TO "SUPPLEMENT" YOUR PRACTICE REVENUES

Presented by Life Extension Time: 7:30 pm – 9:00 pm Speaker: **Steven V. Joyal, MD** Room: South Pacific Ballroom – Room f

SATURDAY, DECEMBER 12, 2009

AESTHETIC MEDICINE: THE VALUE OF RELATIONSHIP-BASED CARE Presented by Syneron Time: 1:00 pm – 2:00 pm Speaker: Stephen Mulholland, MD Room: Islander Ballroom – Room i

AESTHETIC MEDICINE: THE SCIENCE BEHIND ZERONA AND THE ZERONA PRACTICE Presented by Erchonia Medical

Time: 2:00 pm - 3:00 pm Speaker: *J. Kevin Duplechain, M.D., F.A.C.S and Ryan Maloney* Room: Islander Ballroom - Room i

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To enter the competition you must be a registered conference delegate or expo visitor to the 17th Annual World Congress on Anti-Aging Medicine and Biomedical Technologies. Exhibitors, sponsors and their staff are not eligible to win. You must be present to win.

Car Giveaway to be held on Saturday, December 12th at approximately 12:30 pm Booth # 635

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REGENERATIVE MEDICINE (ABAARM)

ABAARM was established in 1997 as a professional physician (MD, DO, MBBS) certification and review board which offers physicians recognition in the form of a specialty based examination in anti-aging medicine.

ABAARM/ABAAHP (Part I- Written) Review Course

December 9, 2009 from 6:30pm – 9:00pm Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA Room: Islander Ballroom – Room G

ABAARM Written Examination

December 13, 2009 from 8:00 am – 11:00 am Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA Room: Islander Ballroom – Room G ABAARM (Part II- Oral) Review Course

December 9, 2009 from 6:30 pm – 9:00 pm Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA Room: Islander Ballroom – Room F

ABAARM Oral Examination

December 10-12, 2009 Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA (check with Board Registrar or A4M Service Area for exact room assignment and to confirm examination time)



CERTIFICATION FROM THE AMERICAN BOARD OF ANTI-AGING HEALTH PRACTITIONERS (ABAAHP)

ABAAHP, established in 1999, provides recognition and specialty representation for healthcare professionals, including Doctors of Chiropractic (DC), Doctors of Dentistry (DDS), Naturopathic Doctors (ND), Podiatric Doctors (DPM), Registered Pharmacists (RPh), academic researchers (PhD), nurses (RN), physician assistants (PA), and nurse practitioners (NP), Acupuncturists.

ABAARM/ABAAHP (Part 1 - Written) Review Course

December 9, 2009 from 6:30pm – 9:00pm Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA (check with Board Registrar or A4M Service Area for exact room assignment)

ABAAHP Written Examination

December 13, 2009 from 8:00 am – 11:00 am Mandalay Bay Hotel and Convention Center, Las Vegas, NV USA Room: Islander Ballroom – Room G



To learn more about Board Certification/Certificate Programs of the American Academy of Anti-Aging Medicine, visit www.worldhealth.net, click on "Certifications." For inquiries, please call Board Registrar at 1-888-997-0112 or send an email to boards@a4m.com

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Practice Highlights



JUAN REMOS, MD, MBA

Making a transition from taking care of acute and chronic illness to Age Management, Wellness and Prevention made a tremendously positive impact in my life. As an ER medical director for more than 15 years, I had accumulated many frustrations in my job mostly from not being able to spend enough time with my patients, and not being able to follow them up after treating them.

Now I spend 1 hour with each patient, reaching a deeper understanding of his or her needs and wants, of how the whole environment affects the way they feel. I have attended A4M conferences every year for 5 years and now I am in the fellowship program. Through them I have learned a new medicine that allows me to help my patients stay healthy and have a better quality of life. Simply by balancing neurotransmitters, eliminating food intolerances, optimizing hormone levels, improving the intestinal function, providing adequate nutraceutical supplementation, and sanitizing their sleep patterns, I obtain wonderful results every time. My cash-only practice at the Miami-Institute located in the Four Seasons Hotel, has grown more than 400% in the last 2 years.

I thank you A4M, Dr. Smith and Heidi Pepper for their efforts and courage to pioneer this revolution in Health Care.



ELIZABETH TRINGALI, PA

As a nutritionist and Physician Assistant, I was so excited when I heard about A4M. I have practiced functional medicine in a primary care setting since the late 90s and believe in the scientific, innovative health paradigm this medical society is based on.

In the past, it was to difficult find like minded practitioners that were eager to find the cause of illness and address it with cutting edge therapies verses promoting antiquated treatments that had poor risk to benefit ratios.

When I attended my first module for the fellowship in 2007, I was in heaven! My current physicians and I could not get enough of the newest research and science that is the wave of the future. We attended every module we could and immediately changed the way we practiced medicine. The fellowship was stellar because it provided so much information by the country's top world renowned physicians, scientists, researches and clinicians. The information increased my clinical skills exponentially. I was enlightened with medical knowledge that enhanced the way I practiced. I learned advanced modalities that were easy to incorporate into our large, 20,000 patient based, primary care office.

Soon, we developed The Premier Center for Healthy Aging, and now we are expanding to a larger facility because patients are so pleased with their results. It is so rewarding to practice in this new medical model. With the fellowship and now the Masters Program, I am not only able to prevent and treat disease, but now I have the tools to reverse it.

A4M has been an integral part of our success. The academy, especially Heidi Pepper, Director of Education for A4M has provided much support for our office. The networking at the conferences is a key part in developing a practice, that is so rewarding on many levels. The Fellowship and Masters program will advance any practitioner in their career and in their life!



JIM PAOLETTI, RPh, FAARFM

Completing the Fellowship in Anti-Aging and Regenerative Medicine has had great influence on my professional practice and has enabled me to provide improved patient care. Additionally, my participation in this program has impacted my personal pursuit and passion to education other health professionals in my role as Director of Provider Education at ZRT Laboratory. I found completing this program offered more in the way of practical education that can be implemented into an "every day" practice than pursuing a PharmD degree and clearly this fellowship is well worth the investment, time wise as well as financially



BRONWYN LEWIS, NP

After completing a week long class on functional medicine, I was ready to jump right in to the whole process of treating patients naturally. I was excited to be able to offer my patients the opportunity of choice, choices on how to go about treating their issues and concerns with or without pharmaceutical medications. Choices that centered on how to detoxify the body, how to heal the body and how to keep it healthy. However, the one week class was not enough information for me. I needed more. So, I chose to participate in the A4M fellowship. It was a great way to synthesize all the information that was coming to me from so many different sources. I found the modules at the A4M to be an in-depth study of the information that I had already learned. I met many physicians, pharmacists, and chiropractors from all over the world. I was able to develop a list of living resources, easily accessible and willing to discuss ideas, options and thought processes around any *disease*. Although I completed the program over a year ago, I still enjoy the wealth of information that is readily available to me at anytime. I recommend the A4M modules as a great stepping-stone to "real" healthcare.



JEFF DONOHUE, MD

As a traditionally trained Family Practitioner we are schooled in disease diagnosis and treatment. It was not until I attended my first A4M meeting did I learn that there was an entire field of medicine dedicated to disease prevention. It was not long after that first encounter that I decided to join the fellowship in Anti-Aging and Regenerative Medicine; this has turned out to be the best career decision I could have made. We are taught by world renowned experts with various expertise in the field of functional medicine, each bringing their own unique style ,yet meshing into an easily understood protocol to better treat and prevent multiple disorders.

Since completing my training, which includes at least five modules, and oral and written board exams, I have opened my own anti-aging practice with Bodylogicmd. We are now considered experts in the field of regenerative medicine, and, in fact, see many other physicians and medical professionals as patients. None of this would have been possible if not for the excellent training and exceptional staff at A4M.

I would highly recommend those that are interested in furthering their knowledge of Anti-Aging Medicine to consider pursuing a decision to join A4M and become part of the future of medicine.

2009 Academic Program

The American Academy of Anti-Aging Medicine Conference Program Committee would like to give you the opportunity to submit your abstract for poster presentation and/or for speaking at the 18th Annual World Congress on Anti-Aging Medicine & Regenerative Biomedical Technologies.

All abstracts should be focused on clinical interventions and be applicable to the specialty of Anti-Aging Medicine. Those articles that focus on current events in disease and society will be given priority. All content should be absent of commercial statements and/or product endorsement. Please include a minimum of 4 references.

The Conference will be held as follows:

Spring 2010 – Orlando, FL – April 15-17, 2010 – SUBMISSION DEADLINE: January 4, 2010 Winter 2010 – Las Vegas, NV – December 9 – 11, 2010 – SUBMISSION DEADLINE: June 30, 2010

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For submission guidelines please visit our website at http://www.worldhealth.net /pdf/ SpeakerSubmissionGuidelines.pdf. Please send all of the required materials to program@a4m.com. Please specify the name of the event you are applying for.

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AnewNon-InvasiveApproachfor BodyContouring:

The Application of Low-Level Laser Therapy

By Dr. David Turok

In provide the external application of photonic energy with high output intensities can produce significant adverse events if not properly employed; therefore, it is necessary to explore all parameters in order to identity which delivery mechanism yields the most desirable results while minimizing adverse events.

In recent years, there has been an increase in the application of low-level laser therapy (LLLT) across a diverse selection of medical disciplines.⁶⁻¹⁰ LLLT has been proven to be a safe and effective therapeutic option in clinical and histological trials for multiple applications.¹¹⁻¹⁸ Several Food and Drug Administration (FDA) approvals have been given to LLLT to serve as an adjunctive instrument for post-operative care following breast augmentation and lipoplasty. These approvals have come following extensive clinical and histological trials. Numerous studies have identified that the application of laser therapy at 635nm to cultured adipocytes reveals the formation of a transitory pore within the bilipid membrane inducing cell emulsification.^{19,20} A collection of scanning and transmission electron microscopy (SEM and TEM) images from multiple studies have exhibited the release of fat from adipocytes subsequent to LLLT, a phenomenon not observed in control SEM and TEM images.^{19,20}

To better understand the clinical implications for such an instrument; a placebo-controlled, double-blind, randomized, multi-site clinical study was conducted to assess the efficacy of LLLT as an independent modality for noninvasive body sliming.

The study enrolled sixty-seven subjects between the ages of 18 to 65 years who satisfied the inclusion and exclusion criteria. Patients were asked to sign an affidavit stating that no modifications in their daily dietary or exercise habits will be made throughout the study. In order to properly assess the placeboeffect, the clinical study was randomized and a sham device was used for those 32 patients assigned to receive shamtreatment.

Subjects assigned to the test group were treated with a multiple head low-level diode laser consisting of 5 independent diode laser heads each with a scanner, each emitting 635nm with an intensity of 17mW (The Zerona, manufactured by Erchonia Medical Inc.). Sham-treatment group participants were treated with a multiple head non-laser light emitting diode (LED) consisting of 5 independent red diode light heads each with a scanner, each emitting 635nm (red) with an intensity of 2.5mW. Both the sham treatment light and real laser devices were designed **TABLE 1:** Mean change in total combined circumference measurements from baseline to endpoint for treatment groups (n=67)

Mean Reduction (in.)	Test Group (n=35)	Control Group (n=32)
Mean reduction in total circumference (in.)	-3.521	-0.684

In. indicates inches

to have the same physical appearances, including the appearance of any visible light output.

The circumference in inches (in.) of the subject's waist, hip, and thighs were measured and recorded across all time points. Subjects were evaluated at four different times: pre-procedure; end of first procedure week; end of second procedure week; and two weeks posttreatment phase.

The treatment phase was for two weeks, with each subject receiving six total treatments with either the laser or sham-light scanning device. There were three procedures per week, each treatment two days apart. Patients received both anterior and posterior stimulation, with the waist, hip, and thighs being targeted simultaneously. The diodes were positioned approximately 6 inches above the plane of the skin and were activated for 20 minutes for the anterior side and 20 minutes for the posterior side.

The primary efficacy outcome measure was defined as the change in total combined inches in circumference measurements from baseline to study completion (end of week 2). An individual subject success criterion, set by the FDA, was defined as at least 3.0 inch reduction in combined circumference measurements from baseline to study completion. The overall study success criterion, established by the FDA, was defined as at least a 35% difference between treatment groups, comparing the proportion of individual successes in each group. To further identify the clinical meaningfulness of the device, patients were asked to record a rating on a 5 point scale of very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, not very satisfied. not at all satisfied.

Of the 32 sham group participants, 6.38% (2 subjects), demonstrated a total decrease in combined circumference measurements from baseline to study endpoint of 3.0 inches or greater, while 22 (62.9%) of the 35 test group participants demonstrated a reduction of -3.0 inches or greater, a significant difference between both groups (p<0.0001). Fiftyseven percent more test group participants than sham light treated group participants showed a total decrease in combined circumference measurements from pre-procedure to study endpoint of 3.0 inches or greater. This outcome exceeded the pre-established target of 35% difference between treatment groups by 22%.

Comparison of the two independent group means for the continuous variable of mean change in total combined circumference (total number of inches) from study baseline to endpoint demonstrated a mean difference of -2.837 (Table 1). The difference was found to be statistically significant (p<0.0001).

Compared with baseline, the total combined circumference measurements for test subjects were significantly lower at all three subsequent evaluation points while sham light treated group participants compared with baseline demonstrated insignificant changes in total combined circumference measurements across all three subsequent evaluation points. Further, changes in total circumference measurements between groups were statistically significant at all three subsequent evaluation points. (Table 2).

Twenty-one test group participants (70%) and 8 sham light group participants (26%) recorded a "satisfied" rating. Moreover, one test group participant and 11 control group participants recorded a "dissatisfied" rating. The difference of the rating score between the two treatment groups was found to be statistically significant (p<0.0005).

The observation following this trial revealed that LLLT of the appropriate wavelength applied 3 times per week for two weeks can significantly reduce the circumference at specifically targeted tissue sites due to reduction in the adipose layer. It is important to note that TABLE 2: The difference in change in total circumference measurements between evaluation time points between treatment groups (n=67)

Mean Reduction (in.)	Test Group (n=35)	Control Group (n=32)	Difference between groups
Baseline – week 1	-2.06	-0.27	-1.794
Baseline – week 2	-3.52	-0.68	-2.838
Baseline – 2 weeks post	-3.21	-0.62	-2.953
Week 1-Week 2	-1.46	-0.42	-1.044
Week 1-2 weeks post	-1.15	-0.36	-0.799
Week 2- week 4	+0.31	+0.06	+0.245

In. indicates inches

no adverse events were reported in this clinical trial. Further following a twoweek treatment administration phase, a non-randomized, non-controlled study was conducted assessing serum triglyceride and cholesterol levels and demonstrated an overall reduction in both triglyceride and total cholesterol levels, with no significant elevations reported.²⁵ It is important that all non-invasive modalities claiming to modify subcutaneous fat should provide lipid panel clinical data.

Laser therapy has positioned itself as a viable non-invasive option because of its ability to induce a circumferential reduction, measured in inches, without producing a single adverse event. Since LLLT promotes a photochemical reaction, the observable clinical effect is achieved without producing a photothermal or photoacoustic event. An identified target of laser therapy is a highly specialized enzyme, cytochrome c oxidase, which plays a crucial role in the bioenergetics of the cell increasing the production of Adenosine Triphosphate. How the upregulation of ATP coupled with reactive oxygen species production induces the formation of the transitory pore remains unclear; however, what is lucid is that the application of LLLT can serve as a safe and effective modality, generating inch reduction in just two weeks without a single adverse event.

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But there is a problem. As we age, we produce less GSH.

Our bodies become more susceptible to disease, and our skin ages – just when we need GSH the most.

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GSH cannot be taken as a supplement. Take a GSH pill and it gets destroyed in the stomach. Inject it into your blood and it will get destroyed within a few minutes by the enzymes in your blood. Some companies have resorted to creating supplements that help in the production, by the body, of GSH but there is limited success with this method. Until now.

SCP has created a molecule in a cream base that can be easily absorbed by the skin and reach its cells where it is most needed. The results can often be felt quickly. Not only does Protect120 supplement and nourish the skin cells, it also stimulates the cells to produce more GSH naturally.



With the power of Protect120, many of the supplements you find in a vitamin store are no longer necessary.

Protect120 is intended for cosmetic benefits to the skin only and is not intended to deliver glutathione through the skin to other body tissue. Please be advised that such transdermal delivery may occur, but that is not the purpose for which this product is sold.

THE SECRET IS IN THE MOLECULE

The key to making Protect120 easily absorbed by the cells is that it is 1) fat soluble and 2) small enough to pass through the walls of the cell.

Up until now, most GSH supplements were destroyed in the stomach or in the bloodstream and were water soluble. Our scientists determined that the best method to reach and penetrate the skin cells in our body was if our molecule was fat soluble.

The next challenge was to make the molecule small enough so it could be absorbed by the cells. This challenge took them almost ten years of research before they achieved their goal.

Protect120 has been tested for safety and GSH is perfectly safe for practically any application. Patents have been applied for and are pending. Finally we are in the process of testing our products against many of the most popular GSH products being sold on the market to determine how much better and more effective our product is over every other product.

AVAILABLE DIRECTLY FROM US

If you wish to experience the power of Protect120, order a tube. Note the non-greasy, fragrance-free cream and how easily it spreads and is absorbed into your skin. Use it on problem areas or on any large area such as your arms and legs. Experience the anti-aging

benefit to the look and feel of your skin. And if you have a chance, read on the Internet about the healing power of Glutathione or GSH and the numerous disease conditions it is responsible for healing. Each tube has 4 ounces of cream and should last a few months depending on usage.

Experience the benefits of one of the most important scientific breakthroughs in biotechnology and join those who have discovered Protect120. Order your tube at no obligation today.

In order to substantiate the bioavailability of our GSH for the skin, we conducted two studies to measure what scientists call "end points". One study was to see if Protect120 lowered inflammation (exemplified by redness or soreness of the skin) by lowering C-Reactive Protein (CRP) of subjects who had elevated levels. The other was to see if it would raise low Natural Killer Cell Activity. These type of tests could show that the GSH was available to benefit the look and feel of the skin.

The following results give us confidence that our GSH does indeed raise the GSH levels of our cells, which leads us to conclude that Protect120 supports the natural look and feel of the skin.

A two week study showed an average 46.01% reduction in C-Reactive Protein in study participants.

After two separate two week studies on the same subject, the Natural Killer Cell Cytotoxic Activity increased from a baseline of 21 LU to 65 LU and from a baseline of 21 LU to 64 LU, a 210% and a 205% improvement respectively.

These results suggest that the GSH is bioavailable for skin cells. If you are concerned with the possibility of also raising GSH levels in other cells, at deeper tissue levels (and do not want that possible result) you should consider not using this product.

SCPLLO

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