

## IV-THROUGH THE VEIN

by Ron Hunninghake, M.D.



**W**hat is IV nutrition? IV is an abbreviation for “intravenous—through the vein.” Nutrition means “those natural substances (nutrients) which nourish our cells, promote healing, and create energy.”

When would giving nutrients through the vein make good medical sense?

The conventional medical answer would limit IV nutrition to those patients for whom the oral intake of key nutrients is insufficient to meet their cellular needs.

For example, unconscious trauma victims, patients with extensive facial burns, or certain cancer patients receiving chemotherapy that causes extreme nausea. These are patients whose eating or swallowing abilities are temporarily compromised and who can benefit from IV nutrition.

Limiting IV nutrition to the very sick ignores a large sector of our healthy population who could greatly benefit from IV nutrition to correct nutritional deficiencies at the cellular level.

Over 30 years ago, Dr. John Myers, a medical doctor from Baltimore, wondered if patients with recurrent or chronic illness might also be suffering from hidden malnutrition that could not be overcome by oral nutrients alone.

Many of his patients suffered from migraine headaches, chronic fatigue, allergies, heart disease, acute asthma attacks, fibromyalgia, and recurrent respiratory and sinus infections.

Building upon the success of IV nutrition for severely disabled

patients, Dr. Myers began using a special “cocktail” of IV nutrients, that included a blend of vitamin C, B5, B6, B-complex, magnesium, and calcium (today at the Riordan Clinic we call this our IV Essentials). IV Essentials are necessary when treating the many chronic, degenerative illnesses that he and all primary care doctors face each and every day with their patients.

Dr. Myers also knew of the groundbreaking work of Dr. Hans Selye, a Canadian researcher who had discovered that chronic stress of any kind leads to increased utilization and depletion of the stressed individual’s nutrient reserves.

Nutrient depletion due to chronic stress, compounded with nutrient malabsorption due to digestive inflammation, (which is often triggered by emotional stress) is a formula for cellular disaster.

Conditions that showed improvement with this IV nutrition protocol included: asthma attacks, acute migraines, fatigue and chronic fatigue syndrome, fibromyalgia, acute muscle spasms, depression, cardiovascular disease, respiratory infections, seasonal allergies, drug withdrawal, chronic hives, hyperthyroidism, and chronic viral infections such as hepatitis C. Cancer patients also benefited from the immune support IV nutrition provided them. Many patients who considered themselves healthy chose to come for infusions because of an enhancement to their overall sense of well-being and health that can last for several weeks or longer. *continued on page 4*

## FEATURED SUPPLEMENTS

Bio EN’RGY C POWDER  
**SALE \$37.79**  
reg. 41.99



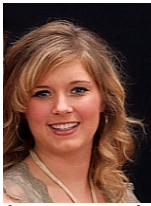
VITAMIN C :  
SUPER GRAM II 500 mg  
**SALE \$28.35**  
reg. \$31.50



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## LETTER FROM THE EDITOR



Greetings:  
Health is about  
wanting better.  
And knowledge.  
And hope. Health  
education should  
be too. Welcome to the new  
incarnation of the *Health Hunters  
Newsletter*, a monthly newsletter  
that chronicles how improving  
health changes lives—and what  
you can do to improve your quality  
of life.

You no longer have to wonder how you can achieve a healthy lifestyle. We will unveil it for you.

The idea of reaching optimum health has captivated me since I was a kid. My mom saw learning about health as a grand adventure.

She regaled me with tales of her personal successes and introduced me to the Riordan Clinic. I have spent my entire life here, learning and exploring the enthralling idea of living a healthy life.

In this issue, we peel back the layers of secrecy surrounding Intravenous Nutrition.

You'll find insights from Ron Hunninghake, M.D., supported by Andrea Rogers, one of our Research Scientists. We strive to offer you a deeper look into important subjects, providing you with the most compelling—and most useful—information.

Also, take a look at our website, [www.riordanclinic.org](http://www.riordanclinic.org). You'll find breaking news, information on our therapies, and learn more about our history.

Enjoy, and let us know what you're thinking—you can email me at: [newseditor@riordanclinic.org](mailto:newseditor@riordanclinic.org).

Amanda Hawkinson  
Editor

P.S. As a gift to our readers we will include an issue of the Nutrition Reporter with every issue of the *Health Hunters Newsletter* so you may continue exploring.



## IV NUTRITION SUCCESS STORY: Anxiety & Hypertension

A 51-year-old male co-learner presented to the Riordan Clinic as a new patient in May of 2010. Frustrated by the lack of conclusions offered by conventional health care providers, this gentleman was suffering from a new onset of anxiety and a history of pain and hypertension.

This co-learner began his experience at the Clinic with a consultation with Dr. Chad Krier. After reviewing his history and thoroughly examining previous reports, Dr. Krier ordered labs that were pertinent in the identification of the patient's source of declining health.

A broad array of lab tests were ordered, but perhaps the most telling were a C-reactive protein, Glutathione, Lipoprotein, Cytotoxic Food Sensitivity, 6-Hour Post DMSA, Lipid Profile, and Urine Vitamin C. Lab results revealed sub-optimal levels of glutathione and vitamin C in the urine. Elevated levels of Lipoprotein and Triglycerides, signifying cardiac risk, were also noted. Additionally, he had elevations in his C-reactive protein and his 6-Hour Post DMSA showed significant elevations in heavy metals.

Numerous sensitivities to differing food items and additives were present. As part of this patient's healing process, a protocol of oral supplements were ordered to treat the vitamin and mineral deficiencies that were present. In addition, he was advised to avoid positive cytotoxic foods and to slowly reintroduce challenge foods at marked intervals. He was also placed on an IV regimen of IV Essentials including a glutathione boost, a powerful antioxidant. Dr. Krier also ordered injections of B12 and folate as part of his treatment.

After just one IV infusion the patient reported that he was "already feeling better." In fact, he felt better than he had in many months. He said, "I sure am a believer in this stuff. It's just what my body needed."

He has undergone several short-lived episodes of anxiety and pain, but overall feels as though the IVs and vitamin injections are really helping him regain his quality of life. In addition, he is beginning to wean from his medications and is slowly replacing them with natural supplementation.



## SPECIAL OFFER

### GET STARTED NOW!

IV Nutrition Program includes:

- Complete medical history review with a Riordan Clinic doctor.
- Mini physical conducted by a Riordan Clinic doctor.
- Intravenous Essentials IV:
  - Vitamin C, Vitamins B5, B6 and B-Complex, Magnesium, and Calcium.
  - IV Essentials takes less than 30 minutes to administer.

**Offer expires 9/1/10** - call 316-682-3100 now for an appointment!

**Introductory Price \$249**

Go to [www.riordanclinic.org/therapies.shtml](http://www.riordanclinic.org/therapies.shtml)  
Intravenous Nutrition for more information.

## IV NUTRITION SUCCESS STORY: Arthritis

A 68-year-old female returned to the Riordan Clinic in April after an absence of 7 years. Her health issues at this time were arthritis, diabetes mellitus, fatigue, hyperlipidemia, hypothyroid, high blood pressure, vertigo, nausea to the point of not being able to eat.

She was also barely able to function at work, felt as if she had lost her edge, and just wanted to sleep all the time due to her dizziness.

Her initial appointment was with Dr. Krier. He ordered the following lab work: ferritin level, comprehensive metabolic panel, CBC (complete blood count), and Indican to test for unfriendly bacteria in the bowel, urinalysis, and vitamin C level.

The urinalysis showed an infection and Indican was positive for unfriendly bacteria in the bowel. Comprehensive metabolic panel showed an imbalance in electrolytes and Ferritin was high.


Riordan Clinic lab testing in April showed deficiency in vitamin D, high TSH level, elevated cholesterol, elevated BD of 335, and a high CRP.

Dr. Krier ordered vitamin D 34,000 IU (one 3x per day), B-Total complex liquid (one dropper 2x per day), ALA Max-Lipoic acid (one 2x per day), Evening Primrose Oil, 500mg (one 2 times per day), and Armour Thyroid, 60mg daily. She was also recommended to do a series of IV Essentials followed by a glutathione 2-3 times per week.

At the end of 5 IVs she reports being able to eat with very little nausea, and she can drive herself to the clinic for her IVs. In general, she feels so much better and is able to work a full day again.

She returned for a follow-up visit on May 4th, at which time Dr. Hunninghake suggested she do a therapeutic phlebotomy for high ferritin level.

She was also started on Iodoral and unprocessed sea salt to help her thyroid levels. The doctor also ordered Magnesium (400mg per day).

She will return for a follow-up in 3 to 4 months. 

## DIVING INTO IV NUTRITION

by Andrea Rogers, Research Scientist

The perfect healthy lifestyle is sometimes hard to obtain. There are complications, like going to the store to buy fresh produce and then having to fix a meal after getting home. Or stopping at the closest drive-thru and eating on the way to the next stop because you're late, again.

Life choices can deplete nutrient reserves and the most direct route to replenish them is through IV nutrition. Health benefits of several of the components of the Essentials are described below.

### GLUTATHIONE

Glutathione is a key player in IV nutrition. It is present in all mammalian cells and protects cell membranes. It is responsible for immune system response, synthesis of DNA and proteins, and scavenging free radicals as an antioxidant. In the liver, glutathione binds to toxic molecules and then is excreted from the body in bile or urine.

Concentrations of glutathione are reduced by short term food deprivation, chronic protein deficiency, and age.

Glutathione combined with vitamin C, selenium, magnesium, and vitamin B (riboflavin) create amazing results. Our IV essentials with optional nutrient "boosts" offer these advantages.

### VITAMIN C

It has been found that, overall, 7.1% of the general population is deficient in vitamin C, while 30% of advanced cancer patients are deficient.

Low levels of vitamin C are seen with smoking, diabetes, myocardial infarction, acute pancreatitis, and infections. Vitamin C is a water-soluble antioxidant with a variety of functions.

As an antioxidant, vitamin C fights oxidative damage which may cause atherosclerosis, rheumatoid arthritis, and neurodegenerative diseases. It also donates electrons to several enzymes, one of which builds energy for the body.

By reducing iron in the small intestine, vitamin C can increase absorption into the body and can make more iron available.

### MAGNESIUM

Magnesium is the second most abundant intracellular cation after potassium. Low levels of magnesium have been associated with asthma, diabetes, and high blood pressure.

Magnesium plays roles in peptide hormone receptor signal transduction, cellular glucose metabolism, stimulus-contraction coupling, stimulus-secretion coupling, and ion channel translocation. In other words, magnesium does a lot. It also stabilizes RNA and DNA structures.

Magnesium has been associated with muscle performance including strength, tone, exercise tolerance, and energy. The energy compound, ATP, must be bound to magnesium in order to become active.

Increased levels of magnesium have been shown to help symptoms of migraines, premenstrual syndrome, and restless leg syndrome.

### SELENIUM

Selenium is also an antioxidant. Selenium aids in glutathione activity to reduce peroxides. It is bound with other molecules to form selenoproteins which serve structural and enzymic roles, like in the production of active thyroid hormone. It also plays roles in immunity, sperm motility, and mood.

Selenium as an antioxidant also works with vitamin E. Selenium helps protect healthy cells from tumor formation by activating barriers. Topical selenium has been useful in the treatment of dry eye and supplementation has been associated with decreased risk for progression to severe cataracts.

### ZINC

Zinc is an interesting nutrient. It aids in the absorption of vitamin A and with transport to its final destination.

Zinc is also involved with the production of hydrogen peroxide that can be used to destroy large particles like bacteria or used by glutathione. Further study of zinc has shown that it is also helpful with ischemic skin ulcers.

A deficiency in zinc reduces a person's DNA synthesis, impairs his or her wound healing, and retards growth.

Correlations of low zinc levels and severe acne in men have also been made.

### CALCIUM

Approximately 99% of the body's calcium is found in the bones and teeth. An association between calcium and blood pressure has been made when there is not a family history of the disease.

High calcium levels have been seen in chronic kidney disease.

## Diving into IV Nutrition - Cont'd from page 3

Deficiency of calcium is seen with osteoporosis and can lead to skeletal malformations during growth periods. Low calcium is also associated with obesity and hypertension. **PANTOTHENIC ACID**

Another necessary nutrient is pantothenic acid. Pantothenic acid is an essential B vitamin needed for co-enzyme A and fatty acid synthesis.

A deficiency of pantothenic acid can cause unhealthy weight loss, diarrhea, and muscle weakness.

Low levels of pantothenic acid have been seen with circulatory and cardiovascular diseases and peptic ulcers. Low urinary excretions have been seen with rheumatoid arthritis.

Life has gotten busy and the added stress takes its toll. IV nutrition is a way to get an extra boost in nutrients that generate more energy, immunity, and general health so we can keep doing the things we want to do.



## Diving into IV Nutrition Sources

1. Murphy, M. E., Scholich, H. & Sies, H. (1992) Protection by glutathione and other thiol compounds against the loss of protein thiols and tocopherol homologs during microsomal lipid peroxidation. *Eur. J. Biochem.* 210: 139-146.
2. Bragt, P. C. & BontÃ , I. L. (1980) Oxidant stress during inflammation: anti-inflammatory effects of antioxidants. *Agents Actions* 10: 536-539.
3. Estrela, J. M. & Pallardo, F. V. (1990) Role of glutathione in the regulation of protein synthesis and degradation in eukaryotes. In: *Glutathione: Metabolism and Physiological Functions* (Vina, J., ed.), pp. 177-183. CRC Press, Boca Raton, FL.
4. Free radical activity, antioxidant enzyme, and glutathione changes with muscle stretch injury in rabbits Thomas M. Best, Russel Fiebig, David T. Corr, Stacey Brickson, and Lili Ji *J Appl Physiol*, Jul 1999; 87: 74 - 82.
5. Effects of Variation in the Dietary Supply of Cysteine and Methionine on Liver Concentration of Glutathione and "Active Sulfate" (PAPS) and Serum Levels of Sulfate, Cystine, Methionine and Taurine: Relation to the Metabolism of Acetaminophen Eltjo J. Glazenburg, Ina M. C. Jekel-Halsema, Egbert Scholtens, Aalbert J. Baars, and Gerard J. Mulder *J. Nutr.*, Jul 1983; 113: 1363 - 1373.
6. Hum, S., Robitaille, L. & Hoffer, L. J. (1991) Plasma glutathione turnover in the rat: effect of fasting and buthionine sulfoximine. *Can. J. Physiol. Pharmacol.* 69: 581-587
7. Dietary Polyunsaturated Fatty Acids and Aging Modulate Glutathione-Related Antioxidants in Rat Liver Raymond Christon, Rahma Belcadi Haloui, and Georges Durand *J. Nutr.*, Dec 1995; 125: 3062 .

continued on pg 7

## IV-Through the Vein - Cont'd from page 1

IV nutrition should be as an important part of a wellness lifestyle, to slow aging, and improve athletic or job performance.

The modified Myers' cocktail (IV Essentials) has generally been ignored by mainstream researchers. However, exciting science does exist to support its use.

Look at IV magnesium, for example. Studies have shown that many people dealing with chronic fatigue syndrome have signs of magnesium deficiency.

When IV magnesium is given, 80% report improvement in pain, energy, and moods. IV magnesium is also a well documented therapy for people suffering from migraines and asthma. Magnesium is included in the IV Essential administered at the clinic.

With the comprehensive biochemical testing available at the Riordan Clinic our doctors are able to inventory an individual's specific nutrient deficiencies.

These objective findings help the Clinic doctor target specific nutrient goals using IV nutrition protocols developed by us.

While much more can be said about IV nutrition, I would like to conclude this brief report with a metaphor that may help the reader grasp the significance of this new therapeutic modality.

Here's the key idea: cells need nutrients like businesses need cash flow. Show me any business with poor cash flow, and I'll show you a struggling business often destined to fail.

Show me a patient with poor nutrient reserves due to poor diet/malabsorption/excessive utilization due to high stress or chronic toxicity, and I will show you a sick and tired individual struggling to get by each and every day,

often destined to come down with a chronic degenerative illness, like heart disease, diabetes, or even cancer. A well run business that successfully services customer needs day after day will generate adequate cash flow and will thrive.

An individual who is committed to their health will make good dietary, exercise, sleep, stress management, and supplemental choices on a daily basis, and they will generate and sustain good health and adequate energy reserves...with enthusiasm to spare!

Now, take a business that is doing poorly: poor cash reserves, lagging customer service, sales and services are down...this business clearly needs something quick to get it on the road to recovery.

How about a loan! How about a quick infusion of cash to satisfy creditors and pay employees? What happens next?

Employees' morale improves. Customer service improves. Jobs get done quicker. Word spreads that X business is functioning again. New jobs come in.

The pace of work quickens. In-house generation of cash flow improves. The "chronically ill" business is on the road to a full recovery.

IV Nutrition is like that well-timed business loan. It gets you back up and running. It gives your cells what they need to heal. It restores your energy, your hope, and your sense of well being.

It gets you...**BACK IN BUSINESS!**

## IV NUTRITION EVENT

PLAN TO ATTEND THE JULY 22, 2010

"ASK THE DOCTORS" EVENT

12:00-1:00pm or 6:00-7:00pm

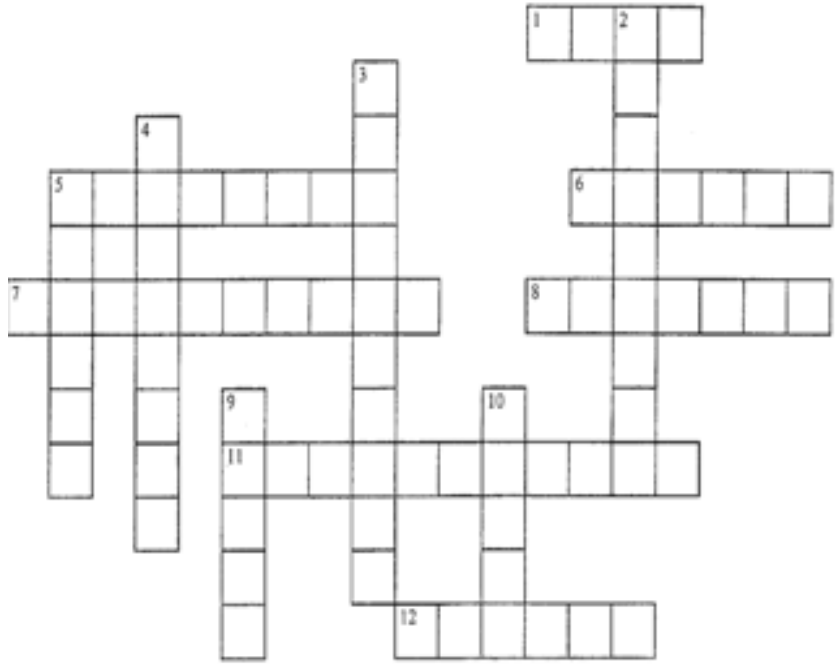
(for more information see page 6)



# INFORMATION WORTH KNOWING IV NUTRITION AND YOU

**ACROSS**

- 1 This mineral increases blood flow and can be helpful when treating acne.
- 5 Who can benefit from IV nutrition?
- 6 Glutathione is a powerful antioxidant that can be difficult to absorb when taken \_\_\_\_\_.
- 7 Eat plenty of fruits and \_\_\_\_\_ to achieve a balanced diet.
- 8 A common symptom that nutrient deficiency can cause.
- 11 An \_\_\_\_\_ is a molecule capable of slowing or preventing cell damage by free radicals.
- 12 This sometimes hidden factor has a huge impact on our health.



**DOWN**

- 2 The foundation of better health is better \_\_\_\_\_.
- 3 A key component of wellness.
- 4 IV Nutrition can put you on the fast track to increased nutrient \_\_\_\_\_.
- 5 Our cells need nutrients to produce \_\_\_\_\_.
- 9 Drink this instead of soda pop.
- 10 This substance can help you control your appetite.

Check your answers on pg 7

## HEALTH HUNTERS NEWSLETTER ONLINE:

SIGN UP YOUR FRIENDS AND FAMILY NOW!  
IT'S FREE AND EASY!



Visit [www.riordanclinic.org](http://www.riordanclinic.org)  
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Fill out your information.

By joining our mailing list, you become eligible to receive our electronic *Health Hunters Newsletter* and updates on lectures, special events, discounts and online promotions. Our mailing list is confidential, your name will not be given to anyone.

You may join this list by filling out your information and submitting the online form. You may also call us at 1-316-682-3100 or send an email to [information@riordanclinic.org](mailto:information@riordanclinic.org).

## WE'RE GOING GREEN (and orange and red and...)

The Taste of Health has jumped into the future by transforming itself into a whole-food juice and smoothie bar! Green spinach, orange carrots, red beets, and a myriad of other fruits and vegetables are converted into life-giving, disease-fighting juices and smoothies that will make your taste buds dance!

During your next visit, stop by for fresh, whole, organic, fruit and vegetable juices and smoothies and mouth-watering sandwiches, salads and wraps.

This fixed menu will highlight these of organic produce from our on campus garden, and will be served a-la-carte.

We will still serve coffee and tea as well.



sandwiches, wraps, and salads prepared fresh from 11:00am-2:00pm.

Take a look at us now!



## FUTURE EVENTS

**"IV Nutrition: Ask The Doctors"**  
Thursday, July 22, 2010  
12:00-1:00PM  
6:00-7:00PM



Back in the early 1960's, an important discovery was made by Dr. John Myers. He found that he could dramatically enhance the medical effectiveness of common nutrients by giving them intravenously; including magnesium, calcium, vitamin C, and B vitamins.

By using this method, patients were able to more quickly and safely overcome a host of conditions such as: fatigue, migraines, asthma, flu, allergies, heart pains, severe muscle spasms, depression, sinusitis, fibromyalgia, hives, and even chronic pain.

Come learn more about how IV Nutrition can help you feel better now! Join us for a presentation and Q&A session with the Riordan Clinic doctors.

For reservations: contact 316-682-3100 or e-mail us at [reservations@riordanclinic.org](mailto:reservations@riordanclinic.org). Cost is \$15 -- lunch and evening snacks are included.

**"Naturopathic Medicine:  
Ask The Doctors"**  
Thursday, August 19, 2010.  
12:00-1:00PM  
6:00-7:00PM



What is Naturopathic Medicine? Naturopathic medicine is based on the belief that the human body has an innate healing ability. Naturopathic doctors (NDs) teach their patients to use diet, exercise, lifestyle changes and cutting edge natural therapies to enhance their bodies' ability to ward off and combat disease.

Naturopathic physicians craft comprehensive treatment plans that blend the best of modern medical science and traditional natural medical approaches to not only treat disease, but to also restore health.

Come learn more with Dr. Chad Krier.

**The Cost of Hidden Stress Group  
Exploration  
with Dr. Ron Hunninghake**

12:00 – 1:00 pm

July 13  
July 27  
August 10  
August 24  
August 31



Stress is such a huge factor in chronic illness today. This workshop is intended to take you on a journey of self discovery and give you new and personal insights into the role of hidden stress and the genesis of chronic illness.

Dr. Ron will use the chapters of "When The Body Says No," by Dr. Gabor Mate, as a springboard for group inquiry into stress and illness... as it relates to the real life situations of those who attend the workshop sessions. Join Dr. Ron and learn helpful insights that can help you overcome hidden stress!

Regular cost is \$15 per session, but Sign up by July 13 for all five sessions for \$60!

For reservations: contact 316-682-3100 or e-mail us at [reservations@riordanclinic.org](mailto:reservations@riordanclinic.org). Lunch is included.

## HEALTH HUNTERS FUTURE ISSUES

**AUGUST 2010**

We will take this opportunity to focus on Naturopathic Medicine and what it can do for you.

Featuring articles by:  
Chad Krier, N.D., D.C.  
Andrea Rogers, Research  
Mavis Schultz, A.R.N.P.

**SEPTEMBER 2010**

We will take a closer look at our Hyperbaric Chamber therapy and show you what a difference it can make for you.

Featuring articles by:  
Ronald Hunninghake, M.D.  
Andrea Rogers, Research  
Mavis Schultz, A.R.N.P.

For more information about our menu and our banquet facilities go to our website:

[www.riordanclinic.org](http://www.riordanclinic.org).

## Diving into I.V. Nutrition Sources Cont'd from pg 4

8. Schleicher R, Carroll M, Ford E, Lacher D: Serum vitamin C and the Prevalence of vitamin C deficiency in the United States: 2003-2004 National Health and Nutrition Examination Survey (NHANES) American Journal of Clinical Nutrition, Vol 90, No 5, 1252-63.
9. Mayland C, Bennett M, Allen K: Vitamin C deficiency in cancer patients. Palliative Medicine (2005) 19:17-20.
10. Ayaori M, Hisada T, Suzukawa M, Yoshida H, Nishiwaki M, Ito T, Nakajima K, Higashi K, Yonemura A, Ohsuzu F, Ishikawa T, Nakamura H: Plasma levels and redox status of ascorbic acid and levels of lipid peroxidation products in active and passive smokers. Environ Health Perspect 108 :105 -108,2000
11. Sinclair AJ, Taylor PB, Lunec J, Girling AJ, Barnett AH: Low plasma ascorbate levels in patients with type 2 diabetes mellitus consuming adequate dietary vitamin C. Diabet Med 11 :893 -898,1994
12. Riemersma RA, Carruthers KF, Elton RA, Fox KA: Vitamin C and the risk of acute myocardial infarction. Am J Clin Nutr 71 :1181 -1186,2000.
13. Bonham MJ, Abu-Zidan FM, Simovic MO, Sluis KB, Wilkinson A, Winterbourn CC, Windsor JA: Early ascorbic acid depletion is related to the severity of acute pancreatitis. Br J Surg 86 : 1296 -1301,1999 .
14. Hyslop P, Hinshaw D, Scraufstatter U, Cochrane C, Kunz S, Vosbeck K (1995) Free Radical Biol Med 19:31-37.
15. Maxwell SR: Coronary artery disease-free radical damage, antioxidant protection and the role of homocysteine. Basic Res Cardiol 95 (Suppl 1) :165 -171,2000 .
16. Blake DR, Winyard PG, Marok R: The contribution of hypoxia-reperfusion injury to inflammatory synovitis: the influence of reactive oxygen intermediates on the transcriptional control of inflammation. Ann NY Acad Sci 723 :308 -317,1994
17. Navarro A, Sanchez Del Pino MJ, Gomez C, Peralta JL, Boveris A. Behavioral dysfunction, brain oxidative stress, and impaired mitochondrial electron transfer in aging mice. Am J Physiol Regul Integr Comp Physiol 2002;282:R985-R992.
18. Engbring JA, Kleinman HK. The basement membrane matrix in malignancy. J Pathol. 2003;200:465-470.
19. Hallberg L, Brune M, Rossander-Hulthen L: Is there a physiological role of vitamin C in iron absorption? Ann NY Acad Sci (1987)498:32432.
20. Hallberg L, Brune M, Rossander L: The role of vitamin C in iron absorption. Int J Vitam Nutr Res Suppl (1989) 30:103-8.
21. Ciarallo L, Brousseau D, Reinert S. Higher-dose intravenous magnesium therapy for children with moderate to severe acute asthma. Arch Ped Adol Med. 2000;154(10):979-983.
22. Liu S, Manson JE, Stampfer MJ, et al. A prospective study of whole-grain intake and risk of type 2 diabetes mellitus in US women. Am J Pub Health. 2000;90(9):1409-1415.
23. Wolf FI, Cittadini A. Chemistry and biochemistry of magnesium. Mol Aspects Med 2003; 24: 3-9.
24. Cowan, J.A. (1995). J.A. Cowan. ed. Introduction to the biological chemistry of magnesium. New York: VCH.
25. Brilla LR, Haley TF. Effect of magnesium supplementation on strength training in humans. J Am Coll Nutr 1992; 11: 326-9.
26. Lukaski HC, Nielsen FH. Dietary magnesium depletion affects metabolic responses during submaximal exercise in postmenopausal women. J Nutr 2003; 132: 930-5.
27. Magnesium and muscle performance in older persons: the InCHIANTI study Ligia J Dominguez, Mario Barbagallo, Fulvio Lauretani, Stefania Bandinelli, Angelo Bos, Anna Maria Corsi, Eleanor M Simonsick, and Luigi Ferrucci Am. J. Clinical Nutrition, Aug 2006; 84: 419 - 426.
28. Fujimori, T, and Jencks WP. Lanthanum inhibits steady-state turnover of the sarcoplasmic reticulum calcium ATPase by replacing magnesium as the catalytic ion. J Biol Chem 265: 16262-16270, 1990.
29. Demirkaya S, Vural O, Dora B, Topcuoglu MA. Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks. Headache. 2001;41(2):171-177.
30. Bendich A. The potential for dietary supplements to reduce premenstrual syndrome (PMS) symptoms. J Am Coll Nutr., 2000; 19.1: 3-12.
31. Hornyak M, Voderholzer U, Hohagen F, Berger M, Riemann D. Magnesium therapy for periodic leg movements-related insomnia and restless legs syndrome: an open pilot study. Sleep, 1998; 21.5: 501-505.
32. Rayman M. The importance of selenium to human health. Lancet, 2000 15; 356.9225: 233-41.
33. Diplock, A. 1981. The role of vitamin E and selenium in the prevention of oxygen-induced tissue damage. Page 303 in Selenium in biology and medicine. J. E. Spallholz, J. L. Martin, and H. E. Ganther, ed. AVI Publ. Co., Inc., Westport, CT.
34. Tappel, A. Selenium-glutathione peroxidase: properties and synthesis. Curt. Top. Cell. Reg. 1984, 24: 87.
35. Wu M, Kang M, Schoene N, Cheng W. Selenium Compounds Activate Early Barriers of Tumorigenesis. J. Biol. Chem., 2010; 285: 12055-12062.
36. Higuchi A, Okubo Y, Tsubota K. Selenoprotein Is a New Candidate for the Treatment of Dry Eye. Invest. Ophthalmol. Vis. Sci., 2007; 48: 403.
37. Huang L, Coleman A, Yu F, Stone K, Ensrud K, Cauley J, Pedula K, Hochberg M, Mangione C, and Study of Osteoporotic Fractures Research Group. Association of Selenium Supplement Use and Intraocular Lens (IOL) Among Older Women. Invest. Ophthalmol. Vis. Sci., 2007; 48: 5442 .

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Answers to  
Knowledge Worth Knowing  
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