



## Vitamin C and angiogenesis: new research and new mechanisms

by Dr. Joseph Casciari

One of the keys to the growth and spread of solid tumors is a process of new blood vessel growth called “angiogenesis.” In tumor angiogenesis, tumor cells produce growth factors that stimulate endothelial cells (blood vessel cells) to grow and migrate toward the tumor. This process is what provides tumors with the nutrients necessary to grow beyond microscopic sizes; it also provides an avenue for metastasis, the spread of tumor cells from the primary tumor to distant sites.

*Since cancer patients tend to be depleted of vitamin C, administration of it tends to improve their overall “well being.”*

Since Dr. Judah Folkman first described tumor angiogenesis roughly 30 years ago, there has been considerable interest in the possibility of curing cancer by halting tumor angiogenesis. The Bio-Communications Research Institute has also been studying angiogenesis and looking for natural products and nutrients that may inhibit it.

The process of tumor angiogenesis works as follows: Tumors produce a growth factor called “vascular endothelial growth factor,” or VEGF, which stimulates mature endothelial cells and recruits endothelial stem cells to the site of the tumor. These endothelial cells start proliferating in response to the growth factor; moreover, they secrete chemicals (proteinases, or MMPs) that break down extracellular matrix so that they can mi-

grate toward the tumor. As tumor cells gain nutrients from a new vascular supply, their population growth increases VEGF production, leading to a “positive feedback” effect of increased angiogenesis. Tumor angiogenesis is complicated by the ability of tumor cells to produce angiostatin and endostatin. These act systemically to inhibit angiogenesis at metastasis sites. When a primary tumor is removed via surgery, angiostatin and endostatin production decrease, which in turn allows the metastatic nodules to suddenly become vascularized and grow. Angiostatin and endostatin are currently in clinical trials, though they are difficult and expensive to produce in large quantities.

Strategies to inhibit angiogenesis involve blocking VEGF, inhibiting endothelial cell proliferation, interfering with MMP activity, or preventing endothelial cell migration. For example, the VEGF blocker, Avastin, has been approved by the FDA for cancer treatment, while thalidomide (yes, the one that caused birth defects in children during the 1960’s) is in clinical trials for cancer treatment because it interferes with endothelial cell migration. Other agents being tested include components isolated from shark cartilage. Because of the side effects associated with drugs of this sort, the search for natural angiogenesis inhibitors continues. The Bio-Communications Research Institute has recently gained evidence that vitamin C (ascorbate) at high concentrations can inhibit angiogenesis.

The Center’s interest in high dose, intravenously administered, vitamin C *continued on page 2*

## Supplements and prostate cancer

Previous studies suggested that three antioxidant supplements, selenium and vitamins C and E, reduced the risk of prostate cancer in middle-aged and elderly men. These results led to two large studies that recently reported disappointing results. One compared selenium, vitamin E, or both with placebos in over 35,000 North American men. The other compared vitamin E, vitamin C, or both with placebos in nearly 15,000 U.S. physicians. Neither study found evidence for cancer prevention from supplements of 200 mcg selenium daily, 500 mg vitamin C daily, or 400 IU vitamin E daily or every other day, after about five and eight years. It seems clear from international comparisons and migrant studies that diet strongly affects prostate cancer risk, but we don’t know how. Possibly the protective effects involve many nutrients and phytochemicals in whole foods, or they might require longer or earlier exposure.

–*J Am Med Assoc* 2009; 301:39, 52 & 102

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# Nutritional Medicine

by Rebecca K. Kirby, M.D., M.S., R.D.

## The team at The Center

Nutrients do not act in isolation. Our biochemistry is a finely tuned machine that to be in good working order requires all nutrients to be present and accountable. This is the teamwork approach.

Just as nutrients work as a team, so do the healthcare providers at The Center. In order to provide the best for our patient/co-learners, the teamwork approach is how we practice at The Center.


For example, the new patient experience provides an opportunity for new co-learners to meet the different doctors and nurses over the course of the two to three day experience. Patients have this opportunity through auricular therapy, nutrition counseling, the physical exam, and intravenous therapies, for example. In addition, patients are discussed and reviewed among all of the doctors at the weekly doctors' meeting. This acquaints the doctors with the new co-learners in order for each to contribute their findings and observations to the case and share their insight and knowledge. The

doctors will also take this opportunity to probe new therapies and ideas with each other for established co-learners as well.

Our team members have diverse interests and backgrounds that enable each to bring something a little different to the table when addressing the unique health issues for every co-learner. There is a rich treasure trove of talents and experiences among our team.

The team approach is an on-going approach. All of the doctors are available to work with any co-learner. The Center is about holistic health care and that includes the whole of what The Center has to offer from all the team members, doctors, nurses, and all of the staff.

For on-going care at The Center, take advantage of all the diverse talents and services of the healthcare team to fully explore your uniqueness and optimize your well-being.

Our mission is to serve and what better way than to provide a range of health approaches with expertise from all of the team. 

### *Vitamin C and angiogenesis—Cont'd from page 1*

began with the ideas of Dr. Linus Pauling and continued with observations, in our laboratories and elsewhere, that at sufficient concentrations vitamin C is selectively toxic toward tumor cells. The Bio-Communications Research Institute's research has shown that if vitamin C is administered by intravenous drip (oral administration is not sufficient), plasma concentrations high enough to selectively kill tumor cells can be achieved. Other nutrients, such as alpha-lipoic acid, can enhance the anti-cancer efficacy of vitamin C. Studies in guinea pigs have shown that high intra-tumor ascorbate concentrations can be achieved, and that tumor growth decreases significantly as the intra-tumor ascorbate concentration increases.

Concurrent to this research, Center physicians have been treating cancer patients with what we now refer to as "The Riordan Protocol" (after Dr. Hugh

Riordan, The Center's founder and vitamin C advocate). This involves a slow drip (over roughly one hour) of ten to 30 grams ascorbate diluted in one liter of Ringer's solution. Treatments can be administered two or three times a week (an initial work-up and screening is required). Plasma vitamin C levels are monitored during the drip, and the dose can be gradually increased as needed. We have had several published positive case studies, particularly with metastatic renal cancer, pancreatic cancer, and breast cancer. Since cancer patients tend to be depleted of vitamin C, administration of it tends to improve their overall "well being." Phase I clinical trials with intravenous vitamin C show that it is relatively safe; blood cell counts remained stable during treatment, as did blood chemistry parameters related to renal function. Phase II trials are

*continued on page 3*

underway at several medical research centers around the country. A protocol, with background and references, is available from The Center by request.

In the meantime, researchers at The Center have been examining vitamin C's potentially beneficial biological effects. For instance, we have published information showing that the vitamin boosts cell mediated immune cell function. Recently, Dr. Nina Mikirova and others published a paper demonstrating that vitamin C, at concentrations relevant to intravenous infusions, inhibits endothelial cell migration and angiogenesis. To establish this, the researchers studied both mature endothelial cells and endothelial stem cells. Both of these cell types are capable of forming vessel like "tubules" under certain laboratory conditions. This tubule formation can be quantified; measurements indicate that endothelial cells exposed to high concentrations of vitamin C do not form tubules as readily as controls. Vitamin C does not impair endothelial cell metabolism or compromise viability, but it does interfere with migration. This is easy to measure: a plastic scraper is used to score a section of a Petri dish containing endothelial cells. Under normal conditions, but not in the presence of high vitamin C concentrations, the cells will migrate to close the gap. Vitamin C also inhibits the ability of endothelial cells to produce nitric oxide (a key regulator of angiogenesis) and VE-cadherin (a "grappling hook" molecule that allows endothelial cells to move through tissue).

The discovery of vitamin C's potential role in preventing tumor angiogenesis is exciting in light of the fact that this vitamin is already being administered intravenously to cancer patients. As a naturally occurring vitamin, its side effects are less severe than those of chemotherapeutic agents and may even provide "side benefits" such as improved overall health. It is a key part of The Center's paradigm for cancer treatment to work with the body rather than against it and to focus on biological response modifiers that restore health by restoring balance and boosting the body's own healing power. [H]

## HEALTH HUNTERS AT HOME

### Foods with a health legacy in your cupboard

by Dean Dodson

I have often thought that it's interesting how items we are familiar with and use today may have started out with a very different purpose. The other day, while digging through the food cupboard, I realized how true this statement is. In many instances the original purpose is being rediscovered today.

For example, take Kellogg's cereals. Most of us have had a bowl of Kellogg's Corn Flakes or eaten granola for breakfast or a snack. Have you ever wondered why we have them and for what purpose they were originally created?

William Keith Kellogg and Dr. John Harvey Kellogg are two of many notable people who influenced health and healthy eating in the late 1800's and early 1900's. They were both interested in nutrition and healthy food. Dr. Kellogg operated the Battle Creek Sanitarium, which advocated exercise, hydrotherapy, fresh air, sunshine, good posture, and healthy food. Dr. Kellogg wrote that "foods abound in vitamins, and vitamins are the real elixir of life discovered at last in this twentieth century" (written around 1880). Dr. Kellogg developed granola in 1877, corn flakes in 1897, and, along with his brother, many other health focused concoctions. Will, or W. K. Kellogg, as he was known, was the person who founded the Kellogg's Cereal Company that we know today. The roots of the Kellogg brothers' products were founded on philosophical principles of health and nutrition.

Another item in the cabinet that I ran across was a bottle of Bitters. You don't really hear too much about the use of "Herbal Bitters" from the mainstream press today. The little bottle reminded me of why we had it in the cupboard.

Several years ago my wife and I were on a rushed trip to visit family in Seattle. We were scheduled to eat lunch with our daughter at a nice seafood restaurant and we both had an upset stomach due to lack of sleep and a lot of travel stress. We knew we were in no shape to eat lunch and were just going to order tea when our waitress spoke up. She was listening as we talked about how

we felt and said, "I think I have just the thing to help you two." She returned to our table a few minutes later with two glasses of a mixture of bitters and soda water. In less than a minute we both felt better and ended up enjoying a good meal with our daughter. There are those who would say it was the soda water that solved our difficulty, but my wife and I are convinced to this day it was the combination of soda water and bitters that did the trick. The alkalinity of the soda water helped settle and open up the flow from our stomachs to the intestines and the bitters got all the necessary digestive juices flowing to move things along. Bitter herbs have been around a long, long time but are mostly ignored today. I know this event convinced us how quickly mild stomach upset can be resolved in short order with an old-time treatment.

Next to be pulled from the cupboard was a bottle of fruit juice. This reminded me of an article I had recently read about mental acuity and aging. The crux of the article stated that in late May and early June of last year an interesting study was discussed at the 38<sup>th</sup> annual scientific meeting of the American Aging Society. The study that I refer to was led by Robert Krikorian, Ph.D., of the Department of Psychiatry, University of Cincinnati College of Medicine. The great thing about this study was that it involved a phytonutrient-rich fruit juice that each and every one of us has easy access to. The drink was pure Concord grape juice. The study suggested that those drinking the grape juice, with its natural polyphenolic antioxidant and anti-inflammatory compounds, showed improved short term memory, spatial memory, and a greater ability to recall detailed lists of information. This study is just another that shows the importance that phytonutrient-rich foods play in the aging or anti-aging process.

Foods and the types of foods we eat really are important. With a little research in regard to what is in your cabinet you might discover some interesting facts of which you may not be aware or may have overlooked. [H]



## INFORMATION WORTH KNOWING

by Marilyn Landreth, M.A.

Have you heard about “gallbladder or liver cleanses” and wanted to know more about what they are and what a “cleanse” can do for your health? Andreas Moritz has written *The Liver and Gallbladder Miracle Cleanse: An All-Natural, At-Home Flush to Purify & Rejuvenate Your Body* to answer questions that people who are interested in this form of therapy may have. In answer to why some people need a liver and gallbladder cleanse, the author suggests that people who have chronic disease usually have gallstones in their liver. He says that restricted liver performance can be linked to obstruction of some sort. Stones in the liver consist of fatty acids and other organic material that tend to make them difficult to see on x-rays, ultra sound, and CT scans. Gallstones in the gallbladder are made up of minerals such as calcium salts and bile pigments that are easier to see on x-rays, ultra sound, and CT scans. The size of the stones can vary from the size of a pin-head to a small walnut. The liver cleanse takes place within a period of less than 14 hours and can be done over a weekend. The author explains why gallstones can be considered a health risk, how to identify signs and symptoms, what causes gallstones, what to expect during and after the liver cleanse, and how others have experienced the liver cleanse. A chapter on frequently asked questions is also beneficial. This month the questions are taken from this book.

**1** The liver is like a large city that delivers water, oil, and gas with a division that removes sewage. As long as there is not a major disruption, the liver can provide what is needed for continued existence. A healthy liver filters \_\_\_\_\_ of blood per minute.

- a. one cup
- b. one pint
- c. three pints
- d. one quart

**2** Good health results when each of the digestive systems is well balanced and coordinated with the rest of the system. The alimentary tract of the digestive system includes ingestion, digestion, absorption, and elimination. \_\_\_\_\_ aid(s) in the chemical breakdown of food.

- a. Minerals
- b. Vitamins
- c. Enzymes
- d. Serotonin

**3** Esophageal reflux, also called heartburn, is a condition that happens when stomach acid washes upward into the esophagus. It is caused by the stomach making too much hydrochloric acid.

- a. True
- b. False

**4** The liver is the largest gland in the body. Besides manufacturing cholesterol, the liver also produces

\_\_\_\_\_ that affects the way the body functions, grows, and heals.

- a. protein and bacteria
- b. hormones and antigens
- c. bacteria and antigens
- d. protein and hormones

**5** In order for the absorption of life-essential fats, calcium, and vitamin K, it is essential to have the presence of \_\_\_\_\_ in the intestines.

- a. chocolate
- b. bile
- c. bupleurum
- d. caffeine

**6** The brain is a complex organ that masterminds the most intricate processes of digestion and metabolism.

- a. True
- b. False

**7** To produce the right amount of bile everyday, which the body needs for proper digestion of food, the liver needs plenty of \_\_\_\_\_.

- a. water
- b. platelets
- c. cadmium
- d. glucose

• FOR ANSWERS, SEE PAGE 7 •

# Test of the Month

by Dr. James A. Jackson,  
Director, Bio-Center Laboratory

## Copper

Copper comes from the Latin name, *Cuprum*, and the chemical symbol is Cu. It was recognized as an essential element in 1928. The body of an adult human contains about 80 mg of copper. It is one of the most significant elements in the human body after iron and zinc. Cu is mainly a tissue element; only about 5% (1.0 mg/L) is found in the blood. The liver contains 6.6 mg/kg of tissue; the brain has 5.4, the heart 3.9, the kidneys 2.9, the spleen 1.2, muscles 0.9, and skin 0.7. Cu is important in red and white blood cell formation and promotes absorption of iron from the intestine. Cu is also responsible for color and elasticity of skin, hair, and connective tissue. Cu has an anti-inflammatory effect in rheumatism. It is especially low in the bone and periosteum.

Cu is so important that it has its own blood transport protein, ceruloplasmin, which contains 8 Cu atoms per molecule. A genetic disorder called Wilson's disease, in which ceruloplasmin is missing, results in a large amount of Cu being deposited in the brain, liver, and kidneys. A symptom of this disease is copper deposits in the cornea of the eye, the Kayser-Fleischer ring. Copper is poisonous in large amounts to bacteria and other microorganisms. They are killed in copper containers. This is why flowers last longer in copper vases or when a couple of copper pennies are dropped in a flower vase. Copper may be released from copper water pipes (especially if treated with ion exchangers or decalcifiers), copper pots and pans, estrogens from oral contraceptives in women, by cigarette smoke, and zinc deficient diets. Menkes Disease is a rare genetic disease that involves copper metabolism with symptoms of “kinky hair,” degeneration of the brain, cramping, and osteoporosis and could lead to death by the age of three months. Early treatment with

*continued on page 6*

## Understanding organic certification

by Sue Eddy, Center Gardener

The Center garden has been an organically certified garden since 1996. What this classification entails is a complex array of rules and regulations revolving around what is grown in the garden and how it is grown. At first glance this seems simple enough, but let's take a closer look.

It all starts with the United States Department of Agriculture. Think of the USDA as an umbrella which oversees the National Organic Program (NOP), which is the umbrella handle, and then all of the raindrops that fall from the basic structure are the 95 accredited certifying agents. Of these, 55 are domestic certifying agents. The purpose of the NOP is to "regulate the standards for any farm, wild crop harvesting, or handling operation that wants to sell any agricultural product as organically produced." They also accredit the certifying agents who inspect farms, livestock operations, and processing facilities to verify compliance with national standards. Of the 55 domestic agencies, Organic Crop Improvement Agency (OCIA) certifies The Center garden.

According to the OCIA website, it is "dedicated to providing the highest quality organic certification services and access to global organic markets." Designed with a focus on farming and international marketing, its goal is to "fulfill the needs of the global organic market." This agency is HUGE, but only one of the 55.

A cruise of the websites of all the certifying agents reveals their purpose to be a marketing tool. Thirteen of the certifiers are in California, three in Iowa, many under the state Department of Agriculture, and Rhode Island is certified under the Department of Environmental Management. There are no certifying agents in Kansas.

Overall, the certifying standards serve as a labeling mechanism for fresh and processed food to be sold to the general public—food raised with only organic seeds, fertilizers, and supplements; no conventional pesticides, artificial fertilizers, human waste, or sewage sludge; and processed without radiation or additives. [H]

## Do it Yourself Detox

by Chad A. Krier, N.D., D.C.



### Tea

A couple of months ago I discussed getting the fatty toxins out of the system. While delving into the research, I discovered a common theme—the use of tea. Tea is cheap and readily available and appears to be a great thing to do on a regular basis in order to promote the release of fatty toxins out of our systems.

It may be best to use a wide variety of different teas if you know you have a significant bioaccumulation of fatty toxins. Some teas prevent the absorption of fats (Ginger and Oolong). Other teas bind to fatty toxins and pull them out of the system (Japanese Matcha). Certain teas promote bile flow (Dandelion root tea), while others turn on the fat burning process (lipolysis and fatty oxidation).

Drinking one to two cups of a combination tea (Ginger and Oolong)

during meals and 30-60 minutes after a meal has ended will help to inhibit pancreatic enzymes that promote fat absorption.

Drinking one cup of Matcha tea with meals utilizes the tea's ability to bind up toxins in the GI tract. Drinking one cup of Matcha tea before bed may also promote elimination.

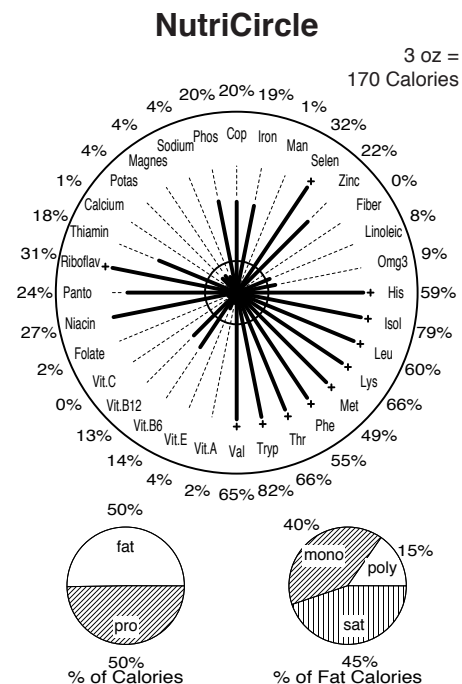
Dandelion root tea works as an herbal choleric (increases bile secretion by the liver and increases the solubility of the bile). It may be best to drink a cup of dandelion root tea 30-60 minutes after a meal.

Green tea increases fatty acid oxidation by blocking enzymes that break down sympathetic hormones. Green tea appears to have a thermogenic (fat burning) effect on the body. Drinking two to three cups during the day before 5:00 p.m. may be best. [H]

## Food of the Month

by Donald R. Davis, Ph.D.

**DUCK** is best known to most Americans as Peking duck, a roasted delicacy originating hundreds of years ago in Beijing (formerly known as Peking), China. It is served in some Chinese restaurants and is prized for its thin, crispy skin. Commercial ducks are mostly a Chinese variety raised on Long Island, New York. As waterfowl, ducks have an insulating layer of fat that partially cooks out during roasting. The fat contains substantial amounts of omega-3 and monounsaturated forms. A 3-oz. serving of roasted duck with skin contains 13% to 32% of the RDAs for 6 vitamins and 5 minerals, plus 50% or more of the RDAs for all 9 essential amino acids.



The length of each bar shows the amount of one nutrient. If a bar extends out to the inner circle, the food has enough of that nutrient to match the calories it contains. The numbers show nutrient amounts in RDAs per serving shown. The pie charts show the sources of calories (left) and the types of fat (right). [H]

# Mental Medicine

by Marilyn Landreth, M.A.



## Rhythms of life

Does it seem to you that the world has suddenly gone crazy with unemployment up, the stock market down, mortgage foreclosures, and unusual weather? Sometimes when the world seems to be in trouble, I remind myself that in times like these there have always been times like these. Back in the 50's, we were building fallout shelters in case the Russians dropped an atomic bomb on us. Since that time the Cold War has been resolved (at least for the time being), and the Berlin Wall has come down—two things that we thought would never happen.

We all long for things to just go along without any problems, but as long as we are living there will be problems and opportunities. Just like the EKG of a heartbeat, the only time we need to worry is when there is a straight line without any ups and downs. If there are no ups or downs in life, then we

are either dead or we are probably not living to our fullest. Learning to focus on what is important to us such as our family, friends, spiritual beliefs, and appreciation of nature can help us cope with the ups and downs of life.

What we focus on has a vast influence on our enjoyment of life. During this down time, many people are viewing it as an opportunity to try something new by starting a new business or by going back to school to learn a new skill or to start a new career. Bernie Siegel, M.D., said, "Accept the diagnosis but not the prognosis" of a potentially fatal disease. In the same way we can accept that the economy is in trouble for the time being and we will need to make necessary changes, but it doesn't have to be fatal unless we quit trying. John Wooden said, "Do not let what you cannot do interfere with what you can do." Focus on what you can do today!

## Case of the month

An 11-year-old male came to The Center in June 2008 with symptoms of headaches, which started when he was in the second grade. He had also been having behavior trouble at school.

While his mother had helped him improve the headaches by having him avoid some foods, she wanted further testing to determine if additional foods were a problem.

Dr. Hunninghake recommended the following tests be performed: CRP; vitamins A, C, E, B12, D, and folate; magnesium; zinc; EFA-RBC; 6-hour post DMSA and UA; pyrroles; and the cytotoxic test. The cytotoxic test was suggested in order to look for more food sensitivities.

His urine vitamin C level was low. He was found to be most sensitive to coconut, lemon, onions, soybeans, and Splenda.

Dr. Ron recommended that he start taking Pro EPA, Beyond C powder, a probiotic powder, L glutamine powder, and vitamin D3.

On July 9, 2008, his mother reported that he had had a big reduction in his headaches. She also said he has better impulse control.

On January 20, 2009, I talked with the mother on the phone and she said he is doing great. He is still taking his supplements and also is doing well in school.

*Copper—Cont'd from page 4*

copper allows an almost normal life.

Elevated Cu in the brain can cause dementia, Parkinson-like symptoms, postpartum-depression, premenstrual tension, and psychosis. Elevated Cu levels have been associated with ADHD. Cu is important in the enzymes SOD (superoxide dismutase) and MAO (monoamine oxidase). Cu intake must be taken in balance with zinc and iron. Cu is found in shellfish, liver, cherries, nuts, cocoa, gelatin, meat, and fish.

The Center physicians frequently order this test on patients with anemia, bone problems, ADHD, mental problems, fatigue, etc. It can be measured in hair, urine, RBCs, serum, or plasma. It is a very valuable diagnostic test.

## CENTER UPDATE

### What is hyperbaric oxygen therapy?

Hyperbaric Oxygen Therapy (HBOT) is a method of administering 100% oxygen at greater than atmospheric pressure to enhance a patient's natural healing processes. 100% oxygen inhaled at different atmospheres dissolves in plasma and other fluids. With very high HBOT, high volumes of oxygen can be forced into plasma that is sufficient to maintain life in the absence of red blood cells. In oxygen filled chambers, the skin also absorbs more oxygen.

HBOT stimulates the immune system and enhances the killing activity of the white blood cells. It increases fibroblasts, stem cells, and neovascularization (important in wound healing, skin grafts, microsurgery, etc).

In chronic wounds, HBOT stimulates the DNA in cells and surrounding tissue. It recruits stem cells to injured areas, thus assisting with tissue regeneration.

HBOT can help to revive damaged neurons and help restore their function.

Anyone with the following conditions may want to consider Hyperbaric Oxygen Therapy: autism, cerebral palsy, Lyme disease, migraine or cluster headache, multiple sclerosis, near drowning, stroke, traumatic brain injury, recovery from plastic surgery, sports injury, fibromyalgia/chronic fatigue syndrome, neuropathy, ALS, or Parkinson's disease.


Here are some resources which will help you learn more about Hyperbaric Oxygen Therapy:

— *The Oxygen Revolution* by Paul Harch & Virginia McCullough, Hatherleigh Press, 2007.

— "Hyperbaric Oxygen Therapy: How Oxygen Under Pressure Can Help Heal Many Diseases" by James Jackson, Ph.D., Lunch & Lecture presented here at The Center.



Answers from page 4

- 1 c. It also produces 1 to 1.5 quarts of bile every day from this process. This ensures that all activities of the liver and the rest of the body run smoothly.
- 2 c. Enzymes are minute chemical substances composed of proteins that cause or speed up chemical changes in other substances without changing the enzyme.
- 3 b. Heartburn is caused by back-flushing of waste, toxins, and bile from the intestines into the stomach. The stomach usually has too little hydrochloric acid.
- 4 d. It also makes new amino acids and converts existing ones into protein, the main building blocks of cells, neurotransmitters, genes, etc.
- 5 b. Without normal bile secretions, the body can't digest and absorb, which can lead to damage to the circulatory, lymphatic, and urinary systems.
- 6 b. While the brain is the most complex organ, the liver is the organ that masterminds intricate processes of digestion and metabolism.
- 7 a. Since the body can't store water the way it stores fat, it is dependent on regular, sufficient water intake. 

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### THE LIVER AND GALL-BLADDER MIRACLE CLEANSE

by *Andreas Moritz*  
 An estimated 20% of the world's population will develop gallstones in their gallbladder at some stage in their lives. Many people with gallstones will have surgery to have their gallbladder removed. Learn how gallstones in the liver can also cause health problems and what you can do about them.  
 Soft cover. (\$14.95 HH price \$13.46)

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with *Chad Krier, N.D., D.C.*  
 Dr. Krier takes you on a sit-down tour of The Center. In this lecture we explore some of the unique diagnostic and therapeutic tools available to Patient/Co-learners at The Center.

### WHAT ARE ANTIOXIDANTS AND WHY SHOULD I MEASURE THEM?

with *Ron Hunninghake, M.D.*  
 Research has shown that antioxidants protect us from heart attacks, cataracts, diabetes, cancer, and just about every chronic disease. But are they safe? One answer to this dilemma is to have your personal plasma levels of antioxidants measured. Personalized dosing of key antioxidants may unlock their promised potential to keep you well.

### OBESITY: WHAT ARE THE RISKS AND STRATEGIES?

with *Rebecca Kirby, M.D., M.S., R.D.*  
 There continues to be growing concern about the growing girth of Americans. Dr. Kirby explores the risks associated with obesity and documented successful strategies for weight loss.

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# Upcoming Events. . .

## Lunch & Lectures:

### March:

- 5 How to Build Emotional Intelligence at Home and in the Classroom
- 12 Vitamin K: New Evidence for Cancer, Heart Health, and Bone Health
- 19 In the Dumps? Beat Depression and Improve Mental Health

**The Spring Lunch & Lecture Series will begin on April 2 with “Preventing Kidney Stones.”**

## Special Upcoming Event. . .

**April 2 - Health Hunter/Beat The Odds “Ask the Doctors”  
FREE Evening Lecture**

**April 3 & 4 - Health Hunter/Beat The Odds Days**  
Discounts on Laboratory Health Panels & Gift of Health Items  
for Health Hunter Members

## Short sleeping time and weight gain

Dozens of studies in children and adults show an association between short sleep (less than 6 hours per night) and excess body weight. A new study in adults shows how short sleep might cause weight gain in susceptible persons. Eleven adults in a sleep lab were allowed to sleep 5.5 hours per night for 2 weeks and 8.5 hours per night for 2 weeks. They were served regular meals and had free access to diverse snacks in a hotel-like environment. During the 5.5-hr sleep period, they consumed on average 300 more calories than during the 8.5-hr sleep period, mostly from sugary snacks. Half of the difference was not offset by increased energy use. Thus, short sleep increased appetite and energy consumption in this sedentary environment with plentiful food and snacks.

*—Am J Clin Nutr 2009; 89:126*