



Berberine: Beyond Blood Sugar

The American Federation for Aging Research is organizing a clinical trial to see if a single therapy can slow down or stave off cancer, cardiovascular disease, diabetes, and cognitive decline in older people. This placebo-controlled study, which will follow more than 1,000 people ages 70–80 over five to seven years, proposes that addressing common processes that underlie these and other diseases of aging will delay their onset. Although the researchers are seeking FDA approval as an aging intervention, they stress that the goal is not to increase lifespan but to lengthen healthspan, our years of healthy life, free of disease and debility.

The drug being tested is metformin, a popular treatment for diabetes. I've always cautioned against all the oral diabetes drugs and recommended replacing them with safe, effective natural therapies. So why am I telling you about this study? Because it supports my growing enthusiasm for berberine.

Berberine is an herbal extract that is sold as a nutritional supplement. Metformin is a drug that requires a prescription. However, they work in a similar way: Both activate AMP-activated protein kinase (AMPK).

AMPK: The Common Link

AMPK is our cellular “fuel gauge.” When energy runs low, AMPK signals the mitochondria to generate more ATP and at the same time conserve energy use. It does this by increasing the formation of new mitochondria so the cells can produce more energy; stimulating the activity of glucose transporters, which move blood sugar into the cells; and curbing the production of excess glucose in the liver.

You can see why activating AMPK lowers blood sugar and improves insulin sensitivity, but there's more. AMPK reduces inflammation and oxidative stress and protects the vascular system. It is a primary driver of the life-extending properties of caloric restriction. AMPK also inhibits the expression of mTOR, a promoter of cell growth and proliferation, including malignant cells. Plus, it promotes autophagy, or cellular house cleaning, by helping clear out toxic cellular debris that accumulates in the brain and elsewhere.

The potential benefits of increasing AMPK activity are profound. According to a 2014 scientific paper, “...current evidence indicates that AMPK activators may reduce risk for atherosclerosis, heart attack, and stroke; help to prevent ventricular hypertrophy and manage congestive failure; ameliorate metabolic syndrome, reduce risk for type 2 diabetes, and aid glycemic control in diabetics; reduce risk for weight gain; decrease risk for a number of common cancers while improving prognosis in cancer therapy; decrease risk for dementia and possibly other neurodegenerative disorders; help to preserve the proper structure of bone and cartilage; and possibly aid in the prevention and control of autoimmunity.”

Guess what the researcher identified as having “the greatest utility as clinical AMPK activators?” That's right, metformin and berberine.

The Case for Berberine

I understand why metformin was selected for the aging study. In addition to lowering blood sugar, it improves insulin sensitivity and has modestly positive

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Health & Healing

YOUR DEFINITIVE GUIDE TO WELLNESS MEDICINE

Julian Whitaker, MD, has practiced medicine for over 35 years, after receiving degrees from Dartmouth College and Emory University. Dr. Whitaker has long been an advocate of living a healthy life. Dr. Whitaker is compensated on the sales of the supplements he formulates with Healthy Directions, LLC. He is not compensated for other companies' products that he recommends in this newsletter. He is the author of 14 health books including: *The Mini-Fast Diet*, *The Whitaker Wellness Weight Loss Program*, *Reversing Hypertension*, *Shed 10 Years in 10 Weeks*, *The Pain Relief Breakthrough*, *Reversing Heart Disease*, *Reversing Diabetes*, and *Dr. Whitaker's Guide to Natural Healing*.

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Remember, you can read current and past issues of *Health & Healing* when you create or access your account at drwhitaker.com.

Dear Reader,

A hundred years ago, pneumonia, tuberculosis, and other bacterial infections were our leading causes of death. Then Alexander Fleming discovered penicillin, and we entered the golden age of antibiotics. Today, just three percent of deaths in the US are due to infectious diseases.

But the gold is losing its luster as the threat of antibiotic resistance grows. At least two million Americans get sick every year with respiratory diseases, diarrhea, wounds, and other bacterial infections that no longer respond to these drugs, and 23,000 die as a direct result.

Earlier this year, the US government earmarked \$1.2 billion to address this problem by funding research to develop more effective drugs, tests to rapidly identify bacterial vs. viral infections, and strategies to reduce antibiotic misuse—including the current practice of giving 70–80 percent of all antibiotics to livestock simply to enhance growth and boost profits.

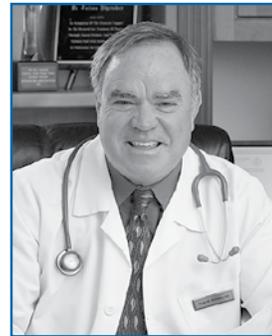
Doctors and patients must also get on board. Half of all antibiotic prescriptions are unnecessary or inappropriate. Colds, sore throats, coughs, and runny/stuffy noses are almost always caused by viruses. Everybody knows antibiotics are ineffective for viral infections, but that doesn't stop patients from asking for them "just in case"—or doctors from writing prescriptions. Bad idea. All you're doing is killing off your beneficial bacteria and encouraging antibiotic-resistant microbes to flourish and, through gene swapping, "teach" their tricks to other bacteria.

No, I'm not suggesting you grin and bear it. Treat symptoms with home remedies, supplements, and over-the-counter products, and by all means consult your doctor if your illness is severe or lingering. Should you require an antibiotic, be sure to take the entire course. Alexander Fleming warned in his 1945 Nobel Prize acceptance speech of "...the danger that the ignorant man may easily underdose himself and, by exposing his microbes to non-lethal quantities of the drug, make them resistant."

The war on germs, which we've been waging with not only antibiotics but also antimicrobial products and obsessive cleanliness, has seriously disrupted the natural balance of microbes in and around us. Science is just now recognizing how this has adversely affected the human microbiome, the trillions of microorganisms in our bodies required for optimal digestion, metabolism, disease resistance, mood, and overall health.

Antibiotic resistance is everybody's problem. Let's get serious about it before it's too late.

To your health,

Julian Whitaker, MD
 America's Wellness Doctor

Director of the Whitaker Wellness Institute, Newport Beach, California

Berberine (continued from page 1)

effects on weight and cardiovascular health—unlike other oral diabetes meds, which increase weight and risk of heart attacks and hypoglycemia. Population studies link metformin use with a lower risk of fatal and nonfatal cancers, and it is being studied as a therapy for cancer as well as neurodegenerative diseases. Furthermore, British researchers recently found that patients who took metformin actually had a 15 percent lower risk of death than non-diabetics of similar age and health status.

Here's why I believe berberine is better. First, although it hasn't been studied to the same degree as metformin, the research is solid and new studies are pouring in. Berberine reduces blood sugar as effectively as metformin and does a better job of lowering triglycerides and LDL cholesterol. It also improves other aspects of metabolic syndrome, including mild reductions in blood pressure and abdominal obesity. Research suggests it helps prevent/retard cancer as well, plus it has positive effects on the brain and gut.

Second, berberine is a safe, natural compound that has been used in traditional medicine for thousands of years. The only reported side effect is constipation with higher doses. Metformin may

have been derived from a plant, but in order to be patented as a drug, it had to be altered, and it never pays to mess with Mother Nature. The most serious side effect is lactic acidosis, a rare but life-threatening condition. One in three users complain of bloating, cramps, diarrhea, nausea, and other digestive problems, and a similar number develop vitamin B12 deficiency due to impaired absorption.

Third, berberine is widely available as a nutritional supplement. Metformin requires a prescription—and good luck trying to get your doctor to prescribe it for preventive purposes.

The health challenges we face as we get older are viewed as a collection of diseases, each treated with its own cocktail of drugs. If you manage to get a handle on one condition, another is likely to crop up as age-related degeneration marches on.

Berberine isn't a cure-all, but it's one of the most promising therapies I've come across in years for warding off disease and enhancing healthspan.

My Recommendation

- ▶ The suggested dose of berberine is 500 mg two or three times a day for lowering blood sugar and twice a day for health maintenance and prevention. Berberine is safe and well tolerated, although it may cause constipation in some people. Monitor your blood sugar if you are also taking diabetes drugs, as it could potentially fall too low. To order, call 800-810-6655.

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Dear Dr. Whitaker

Q I am confused about how much fish oil to take. When you say take 2,000 mg of fish oil, how much DHA and EPA does that represent? What is the minimum daily DHA and EPA one should take?
— G.S., via email

A This is an excellent question. As you note, the amounts of EPA and DHA, not fish oil, are what really matters. For years, the dominant omega-3 supplements were 1,000 mg fish oil capsules containing 180/120 mg EPA/DHA. Today, we also have squid, krill, algae, and other sources of omega-3s, and concentrations range from 8 to 85 percent with varying ratios of EPA to DHA. It's confusing!

To answer your question, 900–1,000 mg of DHA plus EPA is a good daily dose for health maintenance and disease prevention. Ideal ratios of the two have not been established. For example, most of the research on inflammation and cardiovascular disease has focused on EPA, while brain studies stress DHA, although both provide broader benefits. However, most supplements concentrate on total omega-3s, so unless specified or you're dealing with a particular condition, most any mix of the two is appropriate. You should be able to get about 1,000 mg of EPA/DHA in one to three capsules, although some brands have less and a few are more concentrated, so read labels carefully. For specific health conditions, you may need as much as 4,000 mg EPA/DHA. Thanks for writing. In the future, I will be more specific in my recommendations. To order the products we use at the clinic, call 800-810-6655.

 Read more Q&As online at drwhitaker.com/featured-questions-and-answers. Send your own questions to drwhitakerquestions@drwhitaker.com.

Q Is there anything that can be done about excessive earwax? This is a real problem for me.
— Ann, via email

A There's really nothing you can do to prevent this because the amount and type of earwax we produce is genetically programmed, and some people are prone to secreting more than others. The best you can do is prevent buildup with gentle cleansing. You should also avoid Q-Tips and the like, which push earwax further into the ear. For more thorough cleaning or to remove buildup, look for earwax kits in your drugstore. Or place a few drops of water, hydrogen peroxide, or saline solution in your ear, leave it in for a minute or so, then let it drain out. If that doesn't do the trick, your doctor can remove it in a quick office procedure.

Q Can a bad cough cause a stroke?
— Lou D., Fountain Valley, CA

A It's highly unlikely that a forceful cough could cause a stroke. However, excessive coughing may result in headache and temporary dizziness, so it's a reasonable question. Violent coughing can also cause urinary incontinence, muscle strains that lead to back pain, and even rib fractures, especially in people with brittle bones. Most coughs clear up on their own, but if yours doesn't, see your doctor to rule out or treat asthma, lung disease, GERD, respiratory infections, postnasal drip, or other causes of chronic cough. And if you have any signs of stroke, get to the hospital ASAP.

From My Blog

The Many Health Benefits of Beans

Though beans are notorious for their, ahem, gassy nature, their health benefits can't be denied. High in protein, beans and other legumes are one of the few plant sources of the essential amino acid lysine. They're also packed with B-vitamins, folic acid, zinc, magnesium, potassium, and other vitamins, minerals, and phytonutrients. Despite beans' high carbohydrate content, their glycemic index is low so they don't cause rapid spikes in blood sugar or insulin. Furthermore, their fiber (5–8 g per half cup) and indigestible resistant starch nurture gut bacteria, increase fat burning, and discourage fat storage. Regular consumption of these nutritional powerhouses is linked with improvements in heart and intestinal health, diabetes and metabolic syndrome, weight control, and more. To learn more about the many benefits of beans and try some of my favorite recipes, visit my blog.

 Get the rest of the story—and share your opinion—by visiting my blog at “Connect with Dr. Whitaker” on drwhitaker.com.



Works for Me...

▶ **Sneezing and Weight** *I had a constant sneezing problem for many years and I suspected it was due to some type of allergy. On the advice of my physician at Whitaker Wellness, I started on the mini-fast with exercise regimen and reduced the amount of gluten and carbohydrates I was eating. I lost 15 pounds, and eating less gluten has eliminated my sneezing problem. My blood pressure is improving, and I am on only one medication, rather than multiple medications. — John M., via email*

Gluten sensitivity can result in a variety of symptoms, and I'm glad to hear your constant sneezing has resolved. The mini-fast with exercise is an excellent option for anyone who wants to lose weight. You'll find details on drwhitaker.com and in my book, *The Mini-Fast Diet*, available online or by calling 800-810-6655.

▶ **Menopause** *During menopause, I was having a terrible time with hot flashes and muscle spasms. I refused to take synthetic hormones from my doctor. In your newsletter, you wrote about natural progesterone cream. I decided to try it and after just two*

or three weeks, all my problems resolved. Just what I needed at the time. — D.H., Virginia

▶ **Skin Cancer** *These past few years, I have had many small pre-cancerous lesions—from my sunny youth—removed. I developed another one on my arm and scheduled a dermatology appointment. However, about a month after I had stem cell therapy for back pain, I noticed that it was gone. I cancelled the dermatology appointment. A thousand thanks. — L.P., Nebraska*

Stem cells have the unique ability to differentiate into many different types of cells and home in on areas of damage, disease, and discomfort. Patients often report benefits unrelated to their primary health concern. To learn more, visit nbstemcell.com or call 855-627-2820.

▶ **Osteoporosis and Cholesterol** *I had improvements in osteoporosis after taking supplemental calcium, magnesium, and vitamin K and walking. A one-year follow-up DEXA scan showed improvements in bone density—and I did it without dangerous drugs. My cholesterol also dropped dramatically following the use of red yeast rice 1,200 mg per day. — A.H., Florida*

📧 **Have a Health Tip to share? Send it to worksforme@drwhitaker.com. Read more tips at drwhitaker.com/works-for-me.**

Healing Tip

Colorado researchers recently reported that vitamin C provided some of the same cardiovascular benefits as exercise in a study involving obese/overweight people. While no magic pill can replace exercise—no, you can't just sit on the couch and pop supplements—this study does highlight the power and versatility of vitamin C.

📧 Like my Facebook page at facebook.com/WhitakerMD to receive daily healing tips and join the conversation.

Monthly Health Quiz

Type 2 Diabetes: Which of the following is NOT a risk factor?

- A) Taking antidepressants.
- B) Taking statin drugs to lower cholesterol.
- C) Eating lots of sugar.
- D) Having high blood pressure and low HDL cholesterol.
- E) Being of Hispanic, Native American, Asian, or Pacific Islander descent.

Answer:

All except for C are proven risk factors. Even though simply eating sugar may not be a direct cause of diabetes, consumption of sugary beverages has been linked to the disease and a diet rich in high-glycemic carbs can lead to weight gain, the greatest risk factor of all.



Now Available at drwhitaker.com

- Giving Thanks Is Good for Your Health
- How to Avoid Holiday Weight Gain

Visit today for these articles and more in-depth wellness advice to help you achieve optimal health.

Happy Thanksgiving!

“May your stuffing be tasty, may your turkey be plump. May your potatoes and gravy have nary a lump. May your yams be delicious and your pies take the prize. And may your Thanksgiving dinner stay off your thighs!”

— Author Unknown

No computer? Mail your question or health tip to *Health & Healing*, 6710-A Rockledge Dr., Ste. 500, Bethesda, MD 20817.

Eye Diseases: What Works/What Doesn't

My father was a general surgeon in Atlanta. Respected by his peers, admired by the many doctors he mentored, and loved by his patients, he was my inspiration to become a doctor. He retired earlier than he would have liked due to failing eyesight, and over the last 15 years of his life, his vision became progressively worse.

Age-related macular degeneration robbed my dad of more than his career. It hampered his ability to read, enjoy his hobbies and volunteer work, drive, and, ultimately, to live independently. One reason I've taken such a keen interest in macular degeneration, cataracts, glaucoma, diabetic retinopathy, and other eye diseases is because I've seen firsthand how vision loss impacts quality of life.

My Recommendation

► I recommend everyone take vision-protective nutrients starting in their 50s: lutein 20+ mg, zeaxanthin 2–4 mg, and zinc 25 mg per day. A good multi should supply you with enough vitamin C, vitamin E, and other vitamins and minerals. To support normal eye pressures, the suggested daily dose of Mirtogenol is 120 mg. To learn more, visit drwhitaker.com or call 800-722-8008.

doctors sat up and took notice. It was the first major clinical trial to demonstrate an effective treatment for decreasing progression of intermediate or advanced macular degeneration.

To the medical world's surprise, it wasn't a drug or procedure but high doses of beta-carotene, vitamins C and E, and zinc—the same supplements I've been recommending since the 1980s. Compared to the placebo group, those who had taken the supplement were about 25 percent less likely to develop advanced disease.

A follow-up trial, AREDS2, was also conducted to test additional nutrients, and they found that replacing beta-carotene with lutein and zeaxanthin provided even greater protection.

What Conventional Medicine Gets Right—and Wrong

Conventional medicine gets a few things right. Cataract surgery is a safe, quick outpatient procedure that restores clouded vision. VEGF inhibitors—which block the growth of abnormal, leaky blood vessels—are a breakthrough for neovascular (wet) macular degeneration, an advanced form that is a leading cause of blindness. Medications, laser, and surgery for glaucoma relieve pressure on the optic nerve, and laser shrinks blood vessels damaged by diabetic retinopathy.

Nevertheless, these treatments have significant limitations, and with the exception of cataract surgery, none are a cure. Furthermore, they're doing nothing to stem the rising tide. Since 2000, incidence of macular degeneration has climbed by 25 percent, diabetic retinopathy by 89 percent, and glaucoma and cataracts by 19 and 22 percent, respectively.

This is inexcusable because there are safe, well-studied strategies that prevent, slow, and even reverse these life-altering vision problems.

The Power of Nutrition

We've known about the protective effects of selected nutrients for eye health for decades. But it wasn't until 2001, with the publication of the Age-Related Eye Disease Study (AREDS), that

Are You Getting Enough Lutein?

Of the 600 known carotenoids, only lutein and zeaxanthin accumulate in the retina, especially in the macula, which is responsible for central vision and fine detail. These antioxidants give it a dark yellow color (the macular pigment) that acts like a sunscreen, blocking out damaging blue light and protecting against UV-generated oxidative stress.

Preventing degeneration of the retina and macula is obviously important, and supplemental lutein does just that. In another study, participants who took 20 mg of lutein daily for one year had significant increases in the density of the macular pigment. Lutein has also been shown to reduce inflammation, eye fatigue, and glare sensitivity and improve light/dark adaptation and nighttime driving.

Getting enough lutein is more important today than ever. LED lights, compact fluorescent lamps, and smartphones, tablets, computers, and other digital devices emit high levels of blue light—and this may be affecting more than our eyes.

High-energy blue light suppresses melatonin production, and a 2014 study found that low blood levels of lutein and other carotenoids were linked with short sleep duration. Lutein is also active in the brain, and concentrations are significantly lower in people with mild cognitive impairment. In a study

of older women, those who took 12 mg of lutein or lutein along with DHA did better on tests of verbal fluency, and the combo group had improvements in memory and learning.

Cataracts, Glaucoma, and Retinopathy

Lutein and zeaxanthin also slowed cataract progression in AREDS2 participants with low dietary intake of these carotenoids—and because kale, spinach, and other leafy greens are the richest sources (egg yolks are a distant runner-up), many Americans fall into this category. Harvard researchers recently reported that multivitamins help prevent cataracts, and there is evidence that eye drops containing l-carnosine slow progression and improve vision as well.

For glaucoma, *Ginkgo biloba* and high-dose vitamin C help, but the most powerful natural therapy is Mirtogenol, a Pycnogenol-bilberry extract that improves blood flow to the optic nerve. Mirtogenol has been shown to lower eye pressures as well as prescription eye drops, and when the two were combined, pressures were even lower.

The best treatment for diabetic retinopathy is blood sugar control and nutritional support. People with diabetes are often deficient in the full gamut of protective nutrients, so it's not surprising that they also have a dramatically increased risk of glaucoma

and cataracts. If you are dealing with diabetes, supplementation is imperative.

“You Only Get Two Eyes”

Changes in the eyes are inevitable with age, but there's a lot you can do to delay or stave off degeneration. Eat lots of leafy greens, vegetables, nuts, berries, avocados, and omega-3-rich fish. Watch your weight. Be aware of drugs linked with vision disorders, including antihistamines, steroids, and statins. And don't underestimate the power of nutrition.

We spend more than \$20 billion a year on medical care and assistance for Americans with macular degeneration and cataracts. Experts estimate if everyone over age 55 took lutein and zeaxanthin supplements, we could knock nearly \$1 billion off our annual health care expenditures. This would also curb the steep rise in degenerative eye diseases and spare millions the misery of permanent vision loss. As one *Health & Healing* subscriber said, “You only get two eyes. Take care of them.”

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Whitaker Wellness Success Story

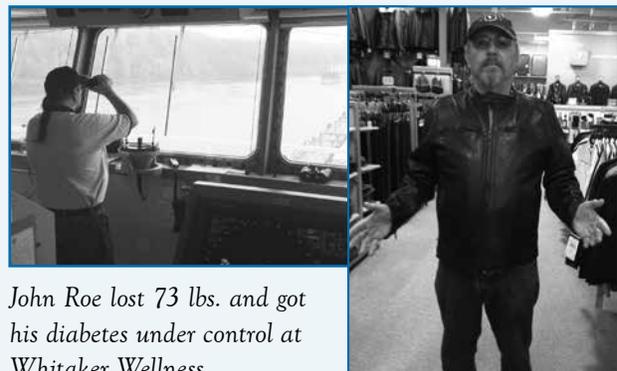
“Happy as a Clam at High Tide”

“When I first came to the clinic five years ago, I weighed 268 pounds and was on the maximum doses of several diabetes medications—including some, as I found out, that were hazardous to my health. My doctor at Whitaker Wellness took me off all of them, which scared the heck out of me. But they monitored me closely, and within two weeks I had lost 20 pounds, and my blood sugar readings were near normal. I was amazed!”

“I went home, thinking I had it beat. Then over a period of time, I fell off the wagon. I stopped eating right, exercising, and following the criteria that had been so beautifully laid out for me. I gained some weight, and my blood sugar readings went out of whack. So I came back for a tune-up and got straightened out again.

“My health remains good, my blood sugar is controlled, and I'm down to 195 pounds. I was a tug captain for 16 years and a ship pilot for another 25 years. I'm retired now, but I'm always out and about, and I have a puppy that keeps me on my feet 24/7. I recently got a recumbent bike and get together with friends for long rides. I am also very involved with my Native American tribe.

“All in all, I'm happy as a clam at high tide. I can't think of a better place than Whitaker Wellness to gain your health back.” — John “Captain Caviar” Roe, Washington



John Roe lost 73 lbs. and got his diabetes under control at Whitaker Wellness.

To make an appointment at the Whitaker Wellness Institute, call 800-488-1500 or visit whitakerwellness.com.

Innovations in Wellness Medicine

Multiple Benefits of Side Sleeping

Everybody knows that sleep duration and quality are important, but what about sleep position? Emerging research suggests that sleeping on your side may be the way to go. First, it can alleviate snoring and mild sleep apnea. Simply changing from sleeping on your back to your side opens up the airways and makes the tongue less likely to fall back into the relaxed throat and cause obstruction and snoring. Second, sleeping on your left side reduces symptoms of indigestion and gastroesophageal reflux disease (GERD) by making it more difficult for gastric acid to escape from the stomach to the esophagus. Third, it's generally easier on your back, although without proper pillow support, it may cause shoulder or neck pain.

The really big news is that sleeping on your side may help stave off Alzheimer's and Parkinson's disease. Animal studies demonstrate that sleeping in the lateral position allows metabolic waste products that accumulate during the day to more effectively flush out of the brain during sleep. This is good news as sleep surveys indicate that the majority of Americans are already side sleepers. However, if you snooze on your back or stomach, try rolling over to reap these health benefits.

Magnesium for Heart Health

What is the single most accurate indicator of heart disease? Is it elevated LDL cholesterol? High blood pressure? Obesity? According to a review of the medical research spanning nearly 80 years, a low blood level of magnesium is far more predictive. Subpar magnesium status and imbalances in calcium and magnesium are linked with all the usual suspects: hardening of the arteries, buildup of arterial plaques, soft tissue calcification, high blood pressure, and elevated cholesterol.

Magnesium has always been one of my core supplements—and not only for coronary artery disease. Given intravenously, magnesium has the power to stop acute asthma episodes in their tracks and normalize erratic heart rhythms. Oral magnesium has a plethora of benefits from improving sleep and easing anxiety to boosting physical performance and preventing diabetic complications. It's easy to up your magnesium intake. Eat more dark, leafy greens, broccoli, nuts and seeds (particularly pumpkin seeds), beans, and dark chocolate. Most important, be sure to take at least 500 mg of supplemental magnesium daily.

Did You Know?

- Cavities are contagious, caused by bacteria that can spread from one person's mouth to another's.
- Falls send 2.4 million older people to the ER annually and cause 20,000 deaths.
- Januvia and related diabetes drugs were recently linked with severe joint pain.
- Menopausal symptoms last at least seven years for more than half of women.
- A review of 38 studies concluded that epidural corticosteroid injections have no significant or lasting effects on back pain.
- Nomophobia, fear/anxiety when out of mobile phone contact, affects half of adults and far more young people.
- The FDA has approved Repatha, an injected cholesterol-lowering drug priced at over \$14,000/year.
- One in 20 Google searches is for health-related information.
- Worldwide population has increased from 1 billion in 1804, to 2 billion in 1927, to 7.3 billion today.
- A third of Americans over age 80 without vascular disease take statins, despite lack of proven benefits.

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