

TIRED AND DEPRESSED? • CHRONIC PAIN? • BRAIN FOG?
LEG CRAMPS? • DIZZINESS? • HAIR LOSS? • WEIGHT GAIN?
DIGESTIVE PROBLEMS? • ARRHYTHMIAS? • NERVE PAIN?



DRUG MUGGERS[®]

Which Medications Are Robbing
Your Body of Essential Nutrients—
and Natural Ways to Restore Them

SUZY COHEN, RPh

Author of Diabetes without Drugs and The 24-Hour Pharmacist

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RODALE

This book is lovingly dedicated to those who continue to endure each day and know that better times are ahead.

And with great affection and love, this is also for my children, Samara, Michael, and Rachel. You make the sun shine every day!

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Introduction

I emptied my brain into this book. I hope it answers every question you have, even the ones you haven't thought of yet. I'd like to think this book is priceless because I wrote it with the intention of fostering your good health and maybe even saving your life.

In pharmacy school 20-something years ago, I learned about the value of medicine. Through the years I've personally seen the benefits of certain medications that save lives. So I know that when your doctor prescribes medication or when you purchase over-the-counter medications, you take those meds in the sincere hope that they'll help you feel better. Yet, despite that miniature pharmacy in your medicine cabinet, it is entirely possible that you still feel awful. Why is that?

The fact is, you can't cure disease with drugs made of synthetic chemicals, especially when they often suppress your body's ability to produce or use natural, healthy nutrients.

Drugs have an intended effect on the body, but in the process of helping you, they can sometimes put your body in a dangerous state by slowly depleting you of the very nutrients you need to maintain your health and to help you heal. This slow depletion can make you feel miserable. It can even hasten your death. I know we all have to face death one day, but why do something that might make that happen sooner rather than later?

Since I became a pharmacist 22 years ago, I've seen an exponential rise in the use of medications, many of them helpful and necessary, but some of them dangerous and dubious. And I know that when drugs deplete the body of essential nutrients, it's easy to replace them by taking the right kinds of supplements. But most people never hear about what they need to take in order to protect themselves from what I call the drug muggers—medications that rob you of the very nutrients you need in order to produce energy, fend off infections, and live in good health. All this is lunacy!

The vast majority of people take a lot of drugs. It's possible that you are among that number and that you feel okay taking these drugs ... for now at least. It's also quite possible that you feel just horrible, worse than you did back when you went to the doctor with your original complaint! There's a good chance that the information you receive in this book will fix that problem and help you feel good again. This *Drug Muggers* book is really your solution to side effects.

As a newspaper columnist with many millions of readers, I get a lot of mail. I can't count how many e-mails and letters have just broken my heart. I read so many of them thinking, "This pain and suffering is so needless and is so avoidable!" Because of all those letters, I've written this book, which is intended to protect you and help you find solutions to uncomfortable problems caused by common medications that you take every day. You see, it's essential to replenish what drugs steal from your body, otherwise you could experience side effects and possibly catastrophic health consequences.

If you have to take medicine, then you should know how to stay safer on it. I want to give you and your physician(s) some insight into why you may not be feeling well and why you are plagued with uncomfortable or bizarre side effects, and I hope to provide some clues about the state of your health along with a major "Aha!" Armed with the information in this book, you'll be able to make changes to your drug regimen or reduce symptoms by installing a nutrient security system so you won't be robbed blind by drug muggers. In fact, if you turn to the Punch List, which begins on page [92](#), it will take you only a moment to look up your medications and find out what nutrients you need to be paying special attention to.

I've always wanted to help people understand their bodies and feel their best, and, with all my heart, I present this book to you. It was really hard getting people to understand the concept at first, and getting it recognized by a publisher so that it could be sold to you in bookstores nationwide. Thankfully, Rodale has seen the value of this information, for which I am most grateful. This book could be a lifesaver for you or someone you love. It allows you to remain compliant with your medication regimen while offering side-effect solutions.

I am known as America's Most Trusted Pharmacist, and I am serious about helping you. I put my heart and soul into this book, and I sincerely hope it is of service to you.

A Word of Caution

Drug Muggers is intended to help you regain health and vitality. However, it's just a book, and there are limitations with any book. First off, not every single drug is listed in it, as there are thousands. Finding a clinical study that discusses the depletion impact of every single drug is not humanly possible, and even if it were, I'm not the human for that job.

What I have done is fill these pages with the most popular medications in use today—a thorough listing of the leading drug muggers in the marketplace. In a few cases, I've included all of the drugs that fit into a particular class, even if there was evidence of depletion impact in only a few of the drug muggers in that class. For example, I may include four different acid blockers because they are in the same drug category, although it's possible that only three of those four drugs actually have studies that demonstrate their depletion impact. Basically, I have applied the commonsense principle, "If it walks like a duck and quacks like a duck, it's a duck!" I believe that if a drug hangs with the drug muggers, then it probably is one. Perhaps some might say that I'm painting with too broad a brush, but where your health and well-being are concerned, I think that the best approach is to err on the cautious side.

As with any book that addresses health, individual safety must be the top priority. So please be advised that my nutrient dosages are only general guidelines, not gospel. If a suggested dosage doesn't seem like the right one for you, then you should determine which one is. If your doctor suggests taking a lower (or higher) dosage, then follow his instruction because he knows your medical history. A few of the dosages I suggest are extremely high by some standards (like the USDA's Recommended Daily Allowance), and they aren't right for everyone. Excessive nutritional supplementation can be harmful to certain people, and I can't tell from here if you're

one of them, so follow your instincts and comply with your doctor's advice.

I did not include chemotherapy on the drug mugger lists even though these medications can deplete many nutrients. They are not here because some oncologists ask you to avoid dietary supplements totally during treatment. So if you are receiving chemo or have used it in the past, ask your oncologist and other practitioners exactly what they would like you to take (if anything).

One more thing: I am not suggesting that the depletion impact of a drug mugger is the cause of your illness. You must discuss every aspect of your personal health with your team of practitioners. I am not a doctor; I am just a nerdy pharmacist who likes to write and eat chocolate. I have my heart in the right place, but I cannot assume the burden of treating you, nor can I be responsible for what happens to you if you take my advice. It is not my intention to diagnose, treat, cure, or prevent any disease. I just want to share information. Finally, my statements have not been evaluated by the US Food and Drug Administration.

How to Use This Book

If you are familiar with my syndicated column “Dear Pharmacist” and my other books, you know that I write in simple terms. Big, complicated words give most people a headache. In this book, I’ve done my best to keep concepts simple, but I’m aware that many of you may want to bring *Drug Muggers* to your physician’s office to get approval for certain nutrients you want to take. Your doctor may scratch his head and say that he’s never heard about “drug muggers.” This is your cue to hand him my book. The concept is real, but the term was invented by my husband, Sam, who came up with it during a flash of brilliance (which occasionally happens if I bake him banana nut bread). I have offered a few deeper scientific explanations within the book for the benefit of physicians, nurses, chiropractors, acupuncturists, naturopaths, and other practitioners who may be seeking more background.

If you have only a few minutes, then just look up your medication in the Punch List, which begins on page [92](#). If you have more time to spare, then read this book cover to cover. You can do it in bits and pieces rather than all at once, since there are 384 pages. Let me just tell you now: It’s okay with me if *Drug Muggers* becomes your bathroom reading material. Splendid. I understand that this may be the only 5 minutes you have to sit down all by yourself without a kid in tow or a boss breathing down your neck.

The index is comprehensive. Your medications are referenced by both generic and brand name. I’ve even indexed symptoms of common disorders that you may be dealing with. For example, “Heart Disease” and “Depression” are indexed. I wrote a fascinating section on lifestyle drug muggers as well, so don’t miss Chapter [3](#).

When my editors reviewed *Drug Muggers*, they said that they felt compelled to take every single nutrient I wrote about. I don’t recommend that you do that. To help you, I’ve divided the book into parts. Part I gives you some helpful general information about drug muggers, what they are and how to protect yourself. Part II provides information on the vital

nutrients that drugs can steal from your body and why it's so important for you to replace them. Part III gives you some general information on how to purchase and use top-quality supplements.

This is also a good place to tell you not to stop taking your medications, although I'm sure you are tempted to do so every time you find your medication on a drug mugger list. My purpose in writing this book is to help you stay safe on your medications if you must take them. It's your side-effect solution. It's not to make you stop taking them. Now, if you seriously want to try natural remedies or use integrative medicine, which combines both natural and holistic options, refer to my other books, visit my Web site, and, of course, speak to your physician about your intentions.

Part I

Protect Yourself from Drug Muggers

1

What Is a Drug Mugger? And Why Should You Care?

As a licensed pharmacist for 22 years, I have a confession to make: Some medications scare me! Don't get me wrong. As someone who has been dispensing prescription and over-the-counter (OTC) drugs for many years, I have a deep respect for what they can do. Pharmaceuticals can ease your pain, help you breathe better, keep you from having a seizure, and alleviate allergy symptoms that make your life miserable. The list of life-enhancing benefits goes on and on and on.

But—and, oh boy, is this a big but—while fixing the one problem that you take the pharmaceutical to fix, that drug is likely robbing you of life-sustaining nutrients in the process. Many, in fact most, of the medicines you're taking have the potential to steal the life out of you slowly. How does that grab you? The ultimate effects of this nutrient depletion explain everything from nagging aches to life-threatening diseases.

Millions of people are slipping through these drug-caused nutrient deficiency cracks as they get sicker and sicker each year. The system is so out of whack that people think it's normal to see eight or nine different physicians for an ailment that eludes diagnosis. And there's a good chance that the ailment can be traced back to a single nutritional deficiency!

While drugs often do provide blessed symptom relief, in most cases they don't actually cure the disease. By virtue of the fact that they steal nutrients from your system or prevent their absorption, they could even be causing more diseases. As you will soon see, if you run low on even one vital nutrient, you can experience a veritable cascade of uncomfortable side effects. Then these will likely be diagnosed as a new disease, for which you will be handed yet another pricey prescription.

Sad to say, you'll get on a medication merry-go-round, and it's a hard ride to get off of. That's why I wrote this book. I

want to empower you to learn what is causing your problems and to help you feel better. Also, knowing what nutrients to replenish will help you to stay compliant with your medications, and this will please your physician, too.

Let's talk about nutrients and their dosages, because you will soon find out while supplement shopping that dosages vary widely from brand to brand. You may be afraid to take more than the US Recommended Daily Allowance, which I sometimes suggest you do, so allow me to give you a primer on the RDA and dosages in general.

The RDI Is Not the Be-All and End-All

In my professional opinion, the reference daily intake (RDI) is just a starting place. It's not the be-all and end-all of good nutrition. The suggested amounts for each nutrient are definitely not enough to provide optimal health or offset the drug mugging effects of your medicines and lifestyle. To tell you the truth, I don't pay much attention to the RDIs on labels because I don't eat a lot of foods that come with labels. That's because I lean toward vegetarianism. (If you do, too, then please eat intelligently, because many vegetarians do not know how to eat properly. They quickly run out of important vitamins, amino acids, and minerals, among them vitamin B₁₂, L-carnitine, and iron.)

Fruits and veggies don't come with a food label stating the RDI. I assure you that these foods are highly nutritious even if they don't have a label to prove it. Not only are plant foods good for you, but they also do away with the compulsive need to read the RDI and make sure you're getting it.

I am bent on keeping a nutritious kitchen, so you won't find many canned foods in my pantry. I keep a can of ravioli for my dad because he loves it and has stayed alive for 80-something years despite eating it. It would take you an hour to find this can. I realize that I'll be in serious trouble if another hurricane barrels through Florida, where I live, but canned, boxed, or highly processed foods are simply not part of my family's diet. This does not mean that you won't find

chocolate-covered macadamias if you search hard enough. Okay, fine, there are some in the top drawer of my desk in case of an unlikely emergency, like if my computer freezes or umm, I umm ... develop writer's block ... or misspell a word :-).

I do not normally buy, eat, or store foods that have lengthy nutrition labels on them. We as humans are at the top of the food chain, so we have the most highly developed brains and impressive cognitive function. This enables us to make a choice to eat consciously, or not. If we all ate organic fruits and vegetables, we could get by with fewer drugs. There would be no stress about whether or not we met the RDI for a nutrient. We would be getting enough of each nutrient naturally.

This whole rant isn't to nag you. I do it because I care. I've read thousands of readers' e-mails and letters over the years. I know that many people are concerned about improving their diets, losing weight, and avoiding a heart attack or diabetes. Many of my readers must take medications that are drug muggers, sometimes multiple drug muggers. Perhaps you are among this number. I can imagine how you feel, taking so much medicine and feeling worse and not knowing what else to do or who else to ask.

This is like being stuck in the middle of a giant whirlpool and not being able to get out. As a pharmacist, I want to get as many people as possible on the right track of taking fewer prescribed drugs. My point is that if you're eating really well—and I know you can—then it won't matter much what the fine print on your food labels says. The same goes with your vitamin or dietary supplement. It may have the RDI listed on it, but if you are being mugged by a drug, you are going to need much more than the RDI suggests. Let me tell you a good story.

A woman came to the pharmacy 1 month after I had suggested that she take additional vitamin B₆ to help her with her carpal tunnel syndrome. She had been taking birth control pills, which I knew to be a drug mugger of vitamin B₆. She told me she wasn't doing any better on the B₆ she had picked up and showed me the bottle. It

was a popular multivitamin that contained 2 mg of B₆. I told her it was abysmally low for her needs, but she insisted that it met 100 percent of the DV and pointed out the ingredient label to prove it. We went round and round for a few minutes until I walked her over to the vitamin aisle and showed her a bottle of B₆ that contained 50 milligrams and suggested she try that for another month. She happily returned a month later to tell me she was totally relieved of her pain.

I'm one of the health-care professionals who happens to think that the RDI is just a minimum requirement that should keep you from developing a deficiency of a nutrient and perhaps dying of that deficiency. For example, the RDI for vitamin C will keep you from developing and dying of scurvy. The recommended amount of vitamin B₁ will prevent you from dying of beriberi. The suggested amount of vitamin D will keep you from developing rickets, and the list goes on. This leaves me deflated and thinking, "That's it?" I'm meeting 100 percent of the DV and all this means is that I won't die from a deficiency? Sheesh! There is a huge gap between suffering from a deficiency and being healthy, isn't there? I choose health. That's why I want more than what the DV recommends. For more on Daily Values, see Chapter [26](#).

Science Looks at Pharmaceuticals

The idea of helping people replenish lost nutrients didn't just suddenly dawn on me; *Drug Muggers* was years in the making. Many other scientists studied this topic before I did. As a pharmacist, I have made it my business to pay attention to every medication on the market and all the interactions that may occur with them. I also watch for news about medications and food or herb interactions. Because I specialize in medication and herbal interactions, I keep files on certain drugs and on all those black box warnings that the FDA comes out with every now and then. A black box warning is basically a warning to physicians stating the possibility of a particularly dangerous side effect. Keeping files and computer documents about such things is part of my professional life. I haven't

included every single clinical research study or trial in this book because it would make it very long indeed. When it is most interesting, however, I have included certain citations in each chapter, but most of my references are in the back of this book so you can see them for yourself at your leisure. The fact is that drugs cause side effects, and many do so by stealing vital nutrients from our bodies. I'm proud to share all this information with you in the coming pages.

My information doesn't come only from studies, however. It also comes from my heart. I want you to know that I used to work in nursing homes, where I saw firsthand the horror of living under the shadow of disease and the negative side effects of multiple medications. I so wanted to have a positive impact on people's lives, and I was saddened that many of the medications that came from my pharmacy did more harm than good. Before I teach you how to restore balance to your own life, I need you to master the basic definition of a drug mugger.

Drug mugger: *noun* An over-the-counter or prescribed medication, food, herb, medical condition, or lifestyle choice that is capable of robbing your body's natural stores of an important vitamin, mineral, or hormone.

Usage: Acid blockers are drug muggers of zinc. Smoking is a drug mugger of vitamin C.

Drug mugging: *adjective* Of or relating to a drug mugger.

Usage: My legs are cramping; I could be suffering from the drug mugging effects of my cholesterol medication.

The Nutrient Depletion Effect of Drugs Is Well Known

The drug mugging effect is real. It's not debatable or something that scientists are still trying to figure out. Even though there are hundreds of published articles and studies regarding nutrient depletion by drugs, millions of people continue to suffer. This is because the information has not

been widely disseminated. Most physicians have not studied it, and many of them do not even know that depletion occurs.

All those drug commercials on TV bother me. They paint miraculous pictures of medicine, but if you don't let yourself get distracted by the playful images, you might hear the litany of side effects of each new drug. The term *side effect* sounds like it's incidental to the main, desired effect. But I think a side effect, especially if it's a really serious one, is really another main effect that happens to be uncomfortable. Every drug has them. It's important to compare the risks to the benefits before beginning drug therapy or any treatment plan, for that matter.

Drugs are advertised to fix one problem, but in reality (as opposed to what's on TV) they often manage to disrupt other aspects of cellular function. That's common knowledge in my circle of health-care practitioners. Unfortunately, it's not common knowledge to most people. So I need you to fully understand that the information in this book will help to reduce your risk of developing uncomfortable side effects from the medication you take.

Side effects (drug mugging symptoms) may not show up right away. Some can occur months to years after taking a drug. For example, you can take a particular medicine for years and then suddenly have a heart attack. Was your heart diseased to begin with? Maybe. But it's also possible that it was weakened by a nutritional deficiency that went overlooked for too long, a nutrient deficiency caused by a drug you were taking to protect your heart. (I'm referring here to drugs that deplete your body of coenzyme Q10 [CoQ10], a nutrient that helps your heart do its job. You'll learn about this in detail further along in this chapter and in Chapter 8.) This kind of tragedy is completely avoidable as far as I'm concerned. All you have to do is take CoQ10 if you take a drug listed in that chapter.

As you turn the pages, I'd love for you to say, "Aha! I just figured out why I feel so bad. Now I know exactly what to take to feel better!" For pennies a day, you can get your life back! As you read this book, you'll be able to recognize whether you are deficient in a particular nutrient; you can then

start to put the right foods on your plate or take absurdly inexpensive vitamins to feel better. Okay, some of the supplements I recommend may cost a little more than you're used to paying for vitamins. But if you compare their cost to the bills for medical care that you won't have to pay down the line, they are, indeed, absurdly inexpensive. Let's take a brief look at some so-called diseases that may be related to the drug mugging effect.

Depression, osteoporosis, and irregular heartbeat: These can all be caused by a deficiency of the mineral magnesium. Common drug muggers of magnesium include female hormones, diuretics, raloxifene (Evista), anti-inflammatories, and aspirin.

Bald patches, loss of taste or smell, erectile dysfunction, and chronic diarrhea: All these conditions may result from zinc deficiency. Common drug muggers for zinc include anti-inflammatories, antibiotics, antacids, ulcer and heartburn medications, diuretics, and estrogen drugs used for birth control and menopause.

Leg cramps, muscle spasms, memory loss, and fatigue: Any of these conditions may develop from a deficiency of CoQ10 (ubiquinone). This life-sustaining antioxidant gets demolished by hundreds of medications, including statin cholesterol drugs, metformin, antidepressants, beta-blockers, and diuretics.

Cataracts, macular degeneration, liver problems, and high levels of the heart-attack-promoting substance homocysteine: Any of these conditions could be tied to low glutathione, a powerful antioxidant needed to get rid of poisons in your body. Acetaminophen is a possible drug mugging of glutathione. (Did you know that taking acetaminophen every day could contribute to vision loss later in life?)

Weight gain, depression, fatigue, anemia, nerve pain, and a sensation of pins and needles: Any of these could be related to a deficiency of one or more B vitamins. Your stash gets depleted by female hormones (used for birth control and to relieve the symptoms of menopause), alcohol, antacids,

ulcer medications, diuretics, raloxifene (Evista), cholestyramine, and diabetes drugs.

Delving Deeper: The Statin Dilemma

I'd like to give you a couple of good examples of how the drug mugging effect develops. So I'm going to start with one of the most prescribed classes of pills on the planet, the statins. These drugs are used to lower cholesterol and to reduce the risk of heart attack. Many people have to take them, physician's orders. But because I am a pharmacist, I'm aware that often people secretly stop taking these drugs because they feel bad when they take them. The statin class of drugs is very effective at reducing cholesterol. They do their work in the liver by suppressing an enzyme called HMG-CoA. When you block that enzyme, you also block the production of CoQ10, a nutrient involved in energy production in every single cell in your body. So statins are drug muggers of CoQ10. It's important to note that dozens of other medications also suppress CoQ10.

Why is that important? A deficiency of CoQ10 can cause you to feel very uncomfortable. It can even be deadly for some people. Here's what can happen when you run too low on CoQ10.

- Leg cramps and heavy, achy legs (The doctors may diagnose this as restless leg syndrome and give you another medication for it.)
- High blood sugar (You may get a diagnosis of diabetes.)
- Impotence (The doctor may tell you that you have erectile dysfunction.)
- Shortness of breath or fatigue (You may be prescribed Provigil or another stimulating drug, or assumed to be hypothyroid and started on the thyroid medication Synthroid.)
- Depression and memory loss (You could be told that you have major depressive disorder, dementia, or the beginnings of Alzheimer's disease.)
- Liver enzyme abnormalities (Your liver may be slowly shutting down. For real.)

- Cardiac arrhythmias or palpitations (You'll likely be given medications to treat coronary artery disease, heart failure, or heart rhythm abnormalities.)

Are you scared? If you see yourself in that list, do you realize that you may simply be deficient in just one important nutrient? Are you scared that your physician hasn't recognized the fact that your declining health may be because you are a victim of the drug mugging effect? Are you scared because your doctor may not be receptive to your request to look into the situation and give you her blessings to buy an affordable OTC nutrient supplement and see what happens? Are you aggravated because you've been bounced around from clinic to clinic and churned through the system like a cash cow?

In today's pill-happy society, most physicians look to the prescription pad for answers instead of delving deeper into why their patients have particular symptoms. I'm happy to report that an increasing number of physicians and other health-care providers are becoming aware of this problem. And many are willing to work with you, monitoring and supervising your progress as you try supplements that could make all the difference in your health.

Fortunately, you have *Drug Muggers* in your hands, so now you know that all you have to do is replenish your cells with what they are starving for. In our example of statins and CoQ10 depletion, all you have to do to better protect yourself is take this relatively inexpensive nutrient sold over the counter. That beats having to take four different medications for all the new diseases that could develop as a result of not replenishing your CoQ10.

Naturally, I want you to ask your doctor for her blessing, because if you have any of the symptoms or diseases listed above, you need to get approval to take any new supplements. I am not a doctor. I am just shining a flashlight for you to illuminate a brighter path of health. Are you with me? Great!

Delving Deeper: The Hormone Replacement Therapy Dilemma

Now let's talk about something that hits close to home for many women. All those top-selling prescription drugs for hormone replacement therapy (HRT) or contraception are among the most dangerous drug muggers I can think of because their nutrient depletion effects on your body range from fatigue and weight gain all the way to stroke and heart attack. But many women suffer so much from low hormone levels after menopause that they have to take these drugs.

The information I provide in the coming pages should help you overcome some (if not all) of the damage these types of hormones have caused you, whether you've just started taking them or you've been on them for many years. I'll teach you about the nutrients you need to replenish what the drug mugger stole.

If you are taking a prescribed hormone for hot flashes, what I call a menopausal mugger, or contraception, you are getting a synthetic form of estrogen, usually estradiol, or ethinyl estradiol; however, there are other types of hormones used in these drugs. Now let's take a look at some of the nutrients that get mugged and what can happen to you as a result.

Iodine Deficiency

Too little iodine can be catastrophic to the breasts, thyroid gland, and immune system. (For men, drug muggers of iodine impact the prostate gland.) Iodine is also needed for fertility, so it is essential in pregnancy. Does it shock you to learn that estradiol decreases your cells' ability to take up iodine? You need iodine to make thyroid hormone. So it makes sense that iodine deficiency has been implicated in Hashimoto's disease (a condition of low thyroid hormone), fibrocystic breast disease, breast cancer (and prostate cancer), uterine fibroids, ovarian cysts, brain fog, diabetes, heart arrhythmias, and the inability to detoxify the body following exposure to mercury, fluoride, and bromide.

Magnesium Deficiency

Oral contraceptives can also wipe out your stash of magnesium, making you very sick because it's involved in

about 300 metabolic pathways in the body. Of all the “diseases” you might be labeled with (and that really relate to magnesium deficiency), the most debilitating ones are depression and/or anxiety, high blood pressure, and a chronic pain condition.

Let’s start with depression. You need magnesium to make the happy brain hormones serotonin, norepinephrine, and dopamine. If you run low on these hormones, life looks gloomier and you become susceptible to anxiety and panic attacks. In a misguided effort to remedy the situation, your brain releases chemicals that cause you to crave sweets and carbohydrates (candy bars, cookies, chocolate), because carbohydrates increase serotonin levels.

Your blood pressure can rise, causing your doctor to diagnose essential hypertension, and this terrible condition increases your risk for heart attack and stroke. It works like this: Magnesium relaxes your blood vessels, allowing for easier blood flow. When you’re magnesium deficient, your blood vessels constrict. As you experience the squeeze, your blood pressure rises.

Running low on magnesium can also cause widespread aches, pain, spasms, and tenderness in the body. You may be told you have fibromyalgia or arthritis. Another type of pain related to magnesium deficiency comes in the form of migraines and chronic headaches. Are you starting to understand how taking one drug (like HRT or birth control pills) can cause you to develop all kinds of new “diseases”?

Zinc Deficiency

When you run out of zinc, you may gain weight, develop hypothyroidism (too little thyroid hormone), experience chronic diarrhea, or lose interest in sex. You may also get sick more frequently. That’s because zinc plays an important role in immune function, and without enough of it, you lose your defense system, most notably some of your T-helper cells and natural killer cells. Ultimately this means that you are less able to defend yourself from pathogens in your environment.

Zinc is involved in the creation of thyroid hormone. You need it to activate your hormone T4, which is a precursor to the active, useful form called T3; and you need this T3 to enter the cell, where it wakes you up. With low zinc, you may develop hypothyroidism, which brings with it hair loss, weight gain, feeling cold all the time, depression, thinning eyebrows, irritability, heart palpitations, weakness, insomnia, fatigue, chronic pain, brittle nails, and dull, dry hair and skin.

Lowered zinc levels cause women to stop producing testosterone, the “manly” hormone. You may not realize this, but women need testosterone, too, for sex drive, just in smaller amounts. So low zinc means lowered testosterone, and low T means less interest in sex. It’s ironic to me that oral contraceptives, sometimes taken to promote sexual freedom, can cause a woman to lose interest in sex altogether! It’s like a cruel twist of fate. The pills make you able to have sex whenever you want to, but you no longer want to!

B Vitamin Deficiency

HRT drugs and contraception can cause your Bs to crash. I’m referring to all of the B vitamins here (think B complex). There is a more complete discussion of each individual B vitamin later in the book, but for now, know that B vitamins are involved in a gazillion biochemical reactions throughout the body, from head to toe. Generally speaking, when you run low on B vitamins, you can start to feel really bad, and very quickly too, within a matter of weeks. You may notice feelings of depression, poor memory, muscle pain, spasms, and weakness or stiffness in your muscles and joints. You may feel nerve tingling, burning sensations, and numbness. You may get more frequent headaches, fatigue, and nausea. These are just a few of dozens of symptoms that can happen as a result of B vitamin deficiency.

You may also hold on to weight. Thiamine (B₁) works in tandem with the other B vitamins to break down proteins, carbohydrates, and fats and turn them into energy. All the Bs play some role in turning food into energy, so when you take a

drug mugger of the B vitamins, you may find it harder to lose a few pounds because your metabolism has slowed down.

B vitamins nourish the nerves and help you form myelin, the protective coating around your nerve cells. When you run low on B vitamins, your nerves get touchy, meaning you may feel pins and needles, numbness, and shock sensations, and you may have a higher propensity to develop conditions like carpal tunnel syndrome or peripheral neuropathy. For more on neuropathy, as well as on natural ways to relieve the pain, refer to my book *Diabetes without Drugs* (Rodale, 2010).

Instead of considering replenishing what the drug mugger stole from you, doctors often prescribe painkillers, anti-inflammatories, and antiseizure drugs, which dampen these maddening and painful sensations.

Estrogen-containing drugs also have the potential to increase your odds of developing heart attack and stroke by depleting your body's B vitamin stash. Essentially, the lower your B vitamin status, the higher your levels of inflammation-causing chemicals such as homocysteine, C-reactive protein, and interleukins. When these substances get too high, your risk for heart attack and stroke increases dramatically.

Without enough B vitamins, especially folate (vitamin B₉), problems such as abnormal cells in the cervix may occur. In fact, it's possible that cervical dysplasia and cervical cancer may be tied to folate deficiency. The deficiency may occur because of the drug mugging effect or because a woman is unable to utilize folate and convert it to 5-MTHF in the cells. (5-MTHF is also sold as a supplement that can be purchased OTC.)

Low vitamin B status increases the risk of depression because Bs are needed to make the feel-good brain hormones dopamine, norepinephrine, and serotonin. B vitamins are often referred to as stress vitamins because they help a person cope by making coping chemicals and happy hormones. Along that line, low B status could very well be driving your anxiety, irritability, tearfulness, full-blown depression, adrenal exhaustion, and panic attacks.

Vitamin C Deficiency

This nutrient is needed to make happy hormones in the brain and to keep us looking youthful. Vitamin C is a water-soluble antioxidant that sweeps away toxins that might otherwise damage your cells. It helps your body form collagen in your bones, cartilage, skin, muscles, and blood vessels. Vitamin C helps your body take up and use iron, too, so when you run low on C, you run low on iron, which can lead to anemia and extreme tiredness. A severe deficiency of vitamin C is rare, but the low-grade drug mugging effect of medications can cause your body to become deficient in this important vitamin. Numerous studies suggest that vitamin C's antioxidant effects (how it protects our cells) are important in preventing cancer and diabetes. Vitamin C also powers up the immune system.

The Drug–Disease Connection

If you're still skeptical—even after reading about some of the nutrients that are depleted and what can happen to a woman who takes drugs containing synthetic female hormones without replenishing the nutrients they deplete—read on. Medical research has established there's a definite connection between the drugs and the diseases. Just a few short years ago, parts of the famous Women's Health Initiative (WHI) study were halted earlier than expected because of problems—namely fatalities—associated with synthetic hormone replacement therapy. Although not all aspects of the Women's Health Initiative were negative, many researchers did conclude that HRT could increase the risk of breast cancer, heart disease, and stroke. The medications used in the study contained equine estrogen and synthetic progestins. This type of synthetic HRT was abandoned by many doctors after these WHI results were published, except as a way to relieve the most debilitating and stressful symptoms of menopause. (Today, more and more doctors are learning about bioidentical forms of estrogen, since those match a woman's body exactly and may be less harmful.)

One study published in the *Journal of the American Medical Association (JAMA)* reported that once women stopped taking

horse-derived estrogens, their risks for heart attack and blood clots went down, although the risk for cancer still remained slightly higher than in women who never took these drugs.

Let's focus on one of the diseases found to be more frequent in the WHI research—breast cancer. Breast cancer takes a long time to develop, and its formation is associated with many factors, among them iodine deficiency, progesterone deficiency, insufficient B vitamins, organic pollutants, and a woman's inability to produce protective estrogen by-products versus those associated with cancer. Obviously, the development of cancer depends on many, many other things, too—your genes, your weight, how long you took these drugs, your liver and kidney function, whether you exercise, and what you eat.

Since it takes breast cancer so long to develop, it makes sense that tumors will be fueled when the environment supports their growth. For example, HRT can cause candida overgrowth, and this yeast may fuel cancer growth. HRT mugs folate, which is needed to protect DNA. So it comes as no surprise that a deficiency of folate contributes to the development of cancer. HRT can steal immune-supportive minerals, such as zinc, iodine, and magnesium. When immunity goes down, cancer growth increases. So the drug mugging effect is a risk factor for developing cancer by virtue of the fact that it robs the body of cancer protective nutrients. Let's just look at facts.

In 2001, the number of hormone prescriptions using equine estrogen (Premarin, Prempro) was 22.8 million from January to March. The incidence of breast cancer was 141 cases per 100,000 women. In 2002, the WHI study results were published and showed unfavorable results (deaths!) associated with some synthetic hormones. At that point doctors stopped prescribing these drugs to many of their patients. Guess what? In 2003, the number of hormone prescriptions dropped to 15.3 million from January to March. And the incidence of breast cancer went down to 124 cases per 100,000 women. Until that time, the incidence of breast cancer had risen for the prior 2 decades. This was the steepest decline in breast cancer

incidence I had seen in my career. This 7.2 percent decline was a startling turnaround.

When a woman is no longer exposed to a drug mugger that is stealing the life out of her, then the odds of her contracting a dreadful disease naturally go down. There are other factors, too. The point I am making is that we did something right in 2003, and it stands to reason that this has something to do with removing a drug mugger that steals numerous vitamins and minerals. Unfortunately, there is no study to prove me right. But to me it's just common sense. Think about it: If you need folate to have healthy cells and healthy DNA strands and a drug is stealing your folate, then your DNA isn't normal, opening up the possibility of tumor formation. I wish someone would do a study showing that this is so. But do we really need to spend millions of dollars on a study to prove common sense?

When the harmful by-products of estrogen linger rather than clearing your body, your risk of cancer increases. So I always tell my clients that if they must take (or have taken) estrogen-containing hormones of any sort, it pays to focus on ways to unglue the harmful estrogen byproducts that are wedged in the body's cells just waiting for the right set of circumstances to start multiplying. What you eat matters, too. It's so simple. Foods rich in a compound called I3C (indole-3-carbinol) turn aggressive estrogens into meek ones that leave the body easily. These foods include cruciferous veggies. Here's yet another reason to eat your broccoli!

Are You Shocked Yet?

Why aren't physicians telling women that these possibilities exist? Why are millions of women still getting these medications without a warning that they may become deficient in life-sustaining nutrients? And worse, how come when new problems and symptoms pop up, people are not given nutritional testing as part of a standard routine to find the underlying cause?

It's so upsetting to me that millions of women pick up their monthly prescriptions for birth control pills, along with their

antidepressants, thyroid medications, and pain pills. So many young happy women in their twenties get their monthly birth control pill packs, and by the time they are 30 or 35, they are already on four or five other medications. Plus, they are overweight, tired, depressed, and anxious. Some become severely riddled with excessive estrogen, a condition called estrogen dominance. This excess estrogen then causes even more symptoms, such as fibroids, endometriosis, and heavy periods. Similar problems happen in older women who are taking prescribed synthetic HRT for hot flashes and other menopausal symptoms.

I realize that this is a pretty glum picture. But does it mean that you must stop taking these drugs? Not at all. I assure you, there is hope and there is help. You are holding it in your hands right now.

Solutions for Nutrient Losses from Synthetic Hormones

You can reduce your disease risks from nutrient deficiency very easily. In fact, you have several choices.

1. You can discontinue the medication you are on. Don't do this on your own, because some meds require weaning. Discuss alternatives with your doctor.
2. You can have yourself tested for micronutrients, find out what you are deficient in, and take nutritional supplements to put the deficiency behind you.
3. You can supplement with nutrients and replenish what the drug mugger steals. You'll find detailed information in this book on specific drugs, which nutrients they steal from the body, and how much of those nutrients you need to take to replenish your cells' warehouses.
4. You can consider taking any or all of the following nutrients to install a tighter security system from the drug mugging effects of synthetic hormones. Some of them should be no problem for you to take, such as probiotics (everyone should take these daily on an empty stomach; see Chapter 17). But

for others, you may want approval from your doctor before you begin taking them.

Zinc: 10 mg daily

Magnesium chelate: 250 mg daily, taken at night

Iodine: 12.5 mg once daily, in the form of the supplement Iodoral

Trace minerals: 1 capsule daily

B complex: 1 capsule daily

5-MTHF: 1 capsule 3 times a week

Probiotics: follow label instructions to replenish intestinal flora that protects your immune system

Calcium D-glucarate: 200–500 mg twice a day to remove used-up estrogen

Hemp protein: once daily following label instructions, a vegetarian source of healthy amino acids

Spirulina: daily for energy and detoxification. You don't need trace minerals if you take spirulina each day.

2

When Meals and Medicine Don't Mix

As a pharmacist, I am accustomed to answering questions about drug–drug interactions. Most pharmacists are. We know this language inside and out. Since pharmacists are specialists in drug information and the inner workings of medicines, these questions are easy for us to answer. If we don't know the answers off the top of our heads, we have 4-inch-thick books to look in and detailed computer software to consult.

Dangerous Drug–Food Interactions

By and large, people don't think of food as having any impact on their medicine. But it's very true that certain foods do interact with medications. In some cases, the interaction can be deadly. Most of the time, however, it is not. One way that food can affect your medication intake is by giving your body less of the benefit your medication has to offer you. In the case of certain antibiotics, this could be fatal. For example, if you are fighting a staph infection or pneumonia, you need the full effect of your antibiotic to regain your health.

In the case of pain relievers, it's a catch-22. Pain relievers cause so much stomach upset that they are usually taken with meals to minimize this problem. However, if you take the medicine with food, it may mean that you have to wait a while longer before the benefit of pain relief kicks in.

Your medication's effect can be exaggerated if you combine the drug with food or beverages that have the same effect. Take the example of sleeping pills, which slow respiration and heart rate. When combined with a glass of wine, the effect can be so severe that you just stop breathing and die. It's happened many times. Another example of this enhanced effect is with selective serotonin reuptake inhibitor (SSRI) antidepressants (like Paxil, Zoloft, or Prozac). If you take these along with that

morning cup of joe, the caffeine in the coffee reacts with your medicine and the two together wire you so much that it can cause tremors, panic attacks, and insomnia.

Let's take a look at amlodipine (Norvasc, and the newest Exforge) for another example of potentially deadly interactions. This blockbuster blood pressure pill interacts with grapefruit juice. Grapefruit isn't bad; in fact, the citrus fruit offers tremendous health benefits. but compounds in it can interact with dozens of meds. The untoward effect may be a serious drop in blood pressure or a dangerous rise in heart rate (tachycardia). In fact, consuming grapefruit (and especially its juice) can spike the levels of many drugs. The effect of grapefruit on the body is long lasting, up to 24 hours in some people, depending on how well their liver works, so even separating administration of your medication from the grapefruit doesn't help. See pages [88–89](#) for a list of interactions with grapefruit.

Take the case of some other antidepressants, such as the monoamine oxidase (MAO) inhibitor Nardil (phenelzine). It can interact with cheese, specifically the tyramine in cheese, and in some cases, the interaction can be fatal because it causes a dangerous rise in blood pressure.

In 2008, 64 percent of Americans took three or more drugs and 36.7 percent took five or more. This creates a tremendous potential for interactions between medication and food. The degree of the interaction varies, depending on your age, your sex, your liver function, your genetic blueprint (SNPs, or single nucleotide polymorphisms), your overall health, and your weight. Elderly people and those who are chronically ill or have a poorly functioning immune system should pay especially close attention here. This chapter may even save your life. I've worked hard to create a comprehensive list of drug and food interactions to keep you safe. This type of information is hard to find, and I'm proud to be the one to give it to you.

Some people take medications with a narrow therapeutic index, which means that there is a very thin line between what is an effective dose and what's dangerous. These patients are

always more likely to experience toxic effects from eating the wrong food because the line between toxicity and safety is so thin. In addition, there are differences in the way individuals metabolize (or process) their food and medicine. Let's face it, we all have our own genetic footprints.

Here are some important questions you should ask both your doctor and your pharmacist. They apply to every medicine, prescribed or OTC. Don't be shy. Getting this information is vital for your safety.

- Is a glass of wine (or beer) with dinner safe while taking this medication?
- Will this medication make me sleepy? If so, is it okay for me to have a drink with it?
- Should this medicine be taken in the morning or at night?
- Is it okay to drink caffeine-containing beverages while on this medication?
- Can I have a glass of milk or eat ice cream or yogurt with my medicine?
- Can I eat grapefruit or drink grapefruit juice while on this medicine?
- I spice my foods with ginger, which is a natural blood thinner. Is this okay to do while I'm taking this medicine?
- I take fish oil and/or ginkgo, which are natural blood thinners. Is it okay to take these while on this medicine?

The bottom line is that many commonly prescribed drugs have the potential to interact with everyday foods and beverages. Rather than playing a deadly game of Russian roulette, you need to educate yourself about the medications that you're taking. Talk to your pharmacist, ask questions, and read the informational inserts that come with your medicines. What follows is a list of common drugs and the food and beverage interactions you need to be aware of.

Common but Rarely Discussed Drug– Food Interactions

Acetaminophen or Paracetamol

Examples: Dristan, Excedrin QuickTabs, Midol, Sine-Off, Sinutab, Sominex, Tylenol, and certain Benadryl or St. Joseph Cough Suppressant formulas. Prescription drugs that contain acetaminophen (known as paracetamol overseas) include Lorcet, Lortab, Percocet, Roxicet, Vicodin, and multiple strengths of generic pain relievers labeled hydrocodone-APAP or hydrocodone/acetaminophen.

Acetaminophen, sold primarily under the brand name of Tylenol, is used most frequently to control fever, aches, and pains. It is available without prescription and is actually derived from coal tar. Many people use it to control mild arthritic pain. Scientists don't know exactly how it works, but it's clear that it increases the pain threshold. There are hundreds of combination drugs sold OTC that include acetaminophen on their ingredient list. For example, menstrual products often contain it, and many cough and cold preparations and sleep aids also have acetaminophen. You will have to be a sleuth. Break out a magnifying glass and read the fine print. This is especially important if you take prescription medications that also contain acetaminophen. So, for example, read your prescription bottle of Lortab and see that it contains 500 mg of acetaminophen per dose, and then read the label on your cough and cold product to find out if acetaminophen is in the medicine. Be careful not to ingest more than 4 grams (4,000 mg) per day. The following foods may interact with this medicine:

Alcohol: It can damage the liver, and so can acetaminophen. The combination of these two can be dangerous even if you don't take high doses of the drug or drink an abundant amount of alcohol. Separating the drink from the medicine in time won't matter. To avoid this problem, don't drink at all.

Citrus fruits and vitamin C: These can increase the side effects and toxicity of acetaminophen. Don't take dosages greater than 500 mg of vitamin C per day with acetaminophen.

Oatmeal and high-fiber cereal: These slow down the absorption of acetaminophen; therefore, you won't get as rapid an effect. This isn't a big deal if you're taking it for minor joint pain, but if you're counting the minutes before it relieves your stubbed toe, you'll be waiting longer. Oatmeal is good for you, so just separate the administration of your drug from your food by 2 or more hours.

Echinacea: This herb, which boosts the immune system, comes in supplements and teas. Combining acetaminophen and echinacea can inflame the liver in sensitive people.

Acid Blockers and Antacids

Examples: There are hundreds of brands and different blends. It's impossible for me to include them all; however, I'll list the most common ones found at health food stores and pharmacies. These can be broken down into three types of medications.

Antacids: Aluminum and magnesium hydroxide (Gaviscon, Maalox, Mylanta), aluminum carbonate gel (Basajel), aluminum hydroxide (Amphojel, AlternaGEL), calcium carbonate (Tums, Titalac, Rolaids), magnesium hydroxide (Phillips' Milk of Magnesia), sodium bicarbonate (Alka-Seltzer, baking soda)

H2 blockers: Cimetidine (Tagamet, Tagamet HB), famotidine (Pepcid, Pepcid AC, Pepcid Complete), nizatidine (Axid), ranitidine (Zantac, Taladine)

Proton pump inhibitors (PPI drugs): Esomeprazole (Nexium), lansoprazole (Prevacid), omeprazole (Prilosec and Zegarid, a rapid-release form), pantoprazole (Protonix), rabeprazole (Aciphex)

Acid blockers and antacids are used to prevent damage to the stomach lining by neutralizing stomach acid. The proton pump inhibitors are often used for gastroesophageal reflux disease (GERD or reflux), ulcers, and Zollinger-Ellison syndrome. PPIs can block acid production pretty much 24/7 in an effort to temporarily curb heartburn, coughing, difficulty swallowing, and other painful symptoms associated with these conditions.

When you suppress the natural acid that your body uses to break down food, medication, and supplements, you could develop more serious problems, such as food allergies, heart arrhythmias, tingling in fingers and toes, depression, dizziness, and headache. Therefore, these drugs should be reserved for peptic or duodenal ulcers, or for people who secrete an abnormally high level of acid. Did you know that heartburn is a common symptom of gluten intolerance and low acid in the gut? Acid blockers are drug muggers of most nutrients, even though they don't appear in every chapter of this book. But think about it. Acid blockers suppress acid-alkaline balance and thereby alter pH (acidity) throughout the gut, so the absorption of every single nutrient is suppressed. Here are some other things you need to know about acid blockers.

Alcohol: It can irritate your stomach, erode the delicate lining, and literally poke a hole in it. You shouldn't drink if you have heartburn, reflux, perforations, or ulcers.

Cranberry juice: The combination of cranberry juice with these drugs is actually a good and positive interaction. The juice offsets the drug mugging effect of acid blockers. Without the juice, it appears that you are more susceptible to the drug mugging of B vitamins, particularly B₁₂ (methylcobalamin). So cheers! Bring on the juice.

St. John's wort: Teas and supplements of this herb interact with acid-blocking drugs and might make you more sensitive to sunlight, so it's easier to burn or develop skin blotches.

Spicy food, garlic, and onions: These foods tend to upset the stomach and may necessitate more medication. Avoid them altogether, or eat in moderation according to how you feel.

Fast food, greasy food, and sugary desserts: These foods strip the gut of healthy enzymes and beneficial flora. This will cause you to run out of every nutrient in the book!

Feverfew: This herbal supplement is prized for its ability to ward off migraines and allergies, but it is a mild blood thinner. It's reasonable to suspect that it can exacerbate your condition and increase your risk for a gastrointestinal (GI) bleed.

Coffee and nicotine: Coffee (both caffeinated and decaffeinated) reduces pressure on the esophageal sphincter, so there's more reflux. Nicotine irritates the delicate stomach lining and can lead to reflux, heartburn, or an ulcer. You are tempting fate with these.

ADHD Drugs (Psychostimulants)

Examples: Adderall (amphetamine), Concerta, Dexedrine, DextroStat, Metadate CD and ER, Methylin, Ritalin (methylphenidate), and Vyvanse.

These medications are classified as psychostimulants because they drive up the amounts of stimulating natural substances in the brain. Ironically, all this “speed” calms anyone who happens to have attention-deficit hyperactivity disorder. They're prescribed for children (and adults) with attention deficit disorder, behavioral issues, or hyperactivity to control behavioral outbursts and improve focus, concentration, and learning. The medications are sometimes prescribed for narcolepsy, a disorder in which one drops off to sleep without a moment's notice. Many of these drugs must be swallowed whole, without crushing or chewing, because they are extended-release formulations. Breaking them is very dangerous and has led to death. (Always ask your pharmacist if you can crush your medicine before doing so.) Here are the dangerous drug–food interactions.

Fruit juice: This creates more acid in the stomach and may alter the absorption of medication, by increasing or decreasing it. To avoid this, separate the juice from the medicine by an hour or two.

Alcohol: Methylphenidate can cause poor physical coordination along with dizziness or drowsiness in some people. Alcohol may intensify these effects, so don't combine the two. Also, alcohol is a bit of a “downer” on the nervous system, whereas psychostimulants are “uppers”—another reason not to combine them.

Vitamin C: Supplements have similar interactions as fruit juice, either increasing or decreasing the drug effect.

Coffee, tea, soda, and chocolate: Anything with caffeine can speed the heart just like ADHD drugs. Avoid stimulating foods and drinks altogether while taking this medicine. The reaction can cause nervousness, irritability, insomnia, and heart rhythm abnormalities. If you are one of those people who consider soda a staple in your house and will not give it up, let your doctor know so that your drug dosage can be adjusted. (You can read about soda substitutes on page [75](#).)

Ma huang: Found in many OTC diet pills, energy drinks, and supplements, this herb speeds up your heart and raises blood pressure. Taken with stimulants, the combo is dangerous.

Bitter orange: Found in many OTC diet pills. (Same as ma huang, but to a lesser extent.)

Allergy Medicine

Examples: Alavert, Allegra, Benadryl, Chlor-Trimeton, Clarinex, Claritin, Comtrex, Dimetane, loratadine, Tavist, Zyrtec, and other generics. Allergy pills are also sold by prescription as Allegra (fexofenadine), Atarax or Vistaril (hydroxyzine), Periactin, Trinalin, and dozens of combination products that contain an antihistamine ingredient. Additionally, nasal sprays are now available, including Astelin and Nasonex.

Allergic reactions lead to the release of histamine, which causes a cascade of other chemicals, all of which are responsible for a variety of miserable symptoms. These drugs help people with annoying allergy symptoms, such as sneezing, runny nose, itchy throat and eyes, and cough associated with postnasal drip. They work by blocking the histamine produced when we are faced with the allergic trigger. That's why allergy medicine is referred to as an antihistamine. When you block histamine, you cut down on the misery. Unfortunately, these drugs do nothing to boost the immune system, although they are fantastic at drying up mucous membranes. They are best used in advance of meeting a known allergen. For example, if you know your sister's cat

triggers your allergy, take the medicine several hours before you go to her house. You can also begin antihistamine therapy 2 months before the season hits you, and this seems to head it off better. This is not always practical, nor is it foolproof. Antihistamines can also be taken during or after an allergic event. Here's what you need to look out for while taking these types of drugs.

Alcohol: This combo can increase the sedation caused by your medicine. The result is excessive sleepiness and slowed heart rate and breathing. There's also the spacey factor. Many antihistamines (especially Benadryl, Chlor-Trimeton, and hydroxyzine) can make you feel spacey, and combining them with alcohol makes it even worse.

Grapefruit and its juice: The combination of grapefruit with antihistamines may increase or decrease the blood levels of the allergy medicine, resulting in serious heart problems. Take allergy medicine with water, not juice of any kind, until more data trickles in about potential effects.

Bitter orange: Found as a stand-alone supplement and also as part of a synergistic blend in many OTC diet pills, energy drinks, and supplements, this herb has the potential (though fairly mild) to speed up your heart. I recommend that you not combine it with amphetamine-like medications.

Antianxiety Medicines

Examples: Ativan (lorazepam), Klonopin (clonazepam), Valium (diazepam), and Xanax (alprazolam).

Doctors prescribe these medications for people who are feeling anxious or dealing with grief. They are a form of tranquilizer and work within an hour. These medications are called benzodiazepines, or benzos for short, and they may cause physical or psychological dependence or both.

You should take these meds only for a few weeks, and then you are supposed to wean off them slowly. As a pharmacist, I've seen people rely on these drugs for their anxiety for years, making no attempt to ever get off them. If you are relying on

these drugs to get through your day or to help you deal with your life or your spouse, then consider some natural options that are safer, more effective, and not addictive. Some choices are described in Chapter 6, “Frazzled, Frustrated, and Freaked Out,” in my book *The 24-Hour Pharmacist*. Benzos can cause morning hangovers as well as daytime sleepiness and make it dangerous for you to drive.

When you are anxious or stressed, your brain is in overdrive. Benzos come along and spark the release of GABA (gamma-aminobutyric acid), a calming chemical. In fact, you make a lot of GABA when you are sleeping. The medications are helpful to people prone to insomnia, anxiety, panic attacks, and overactive thinking. They’re not my choice for a long-term fix because they do not repair the underlying imbalance of brain chemicals. But in certain situations, these drugs are extremely helpful. They bring a feeling of relaxation to the body very quickly. I’ve seen them used for people who have to undergo dental procedures, surgery, MRIs, and other intimidating medical procedures. They are sometimes prescribed to people who receive news of a terminal illness or the loss of a loved one. Here is what you need to know.

Alcohol: Drinking increases both the sedative and the intoxicating effects of alprazolam. The use of alcohol should be avoided.

Coffee, tea, and soda: Beverages containing caffeine will work against your tranquilizer.

Kava: You can buy this as a natural tranquilizing supplement or tea. It enhances the effect of prescribed sedatives. The combination is usually dangerous, and there have been fatalities. Completely avoid!

Hops, valerian root, and passionflower: Like kava, these herbs are sold as supplements and teas, and they enhance the effect of sedating drugs.

St. John’s wort: This may increase side effects, particularly sedation.

Nicotine products: These can speed up the elimination of your drug, making it less effective.

GABA supplements: These natural tranquilizers can be purchased at any health food store. They increase amounts of GABA in the brain, so combining them with tranquilizers or antianxiety drugs is not recommended.

L-glutamine supplements: I've recommended this dietary supplement (a natural amino acid) quite often in my syndicated columns and books. It promotes regularity, excellent immune system function, better brain health, good blood sugar control, and increased muscle mass, and overall, it's good for digestive health, too. The problem is that it's a precursor to GABA, so the more of this goody you take, the more GABA you will make. I think it's okay to combine an antianxiety drug and GABA, as long as you stick to a lower dosage of GABA, like 1,000 mg per day (total) or less. If you get too drowsy, you'll know to back off the drug (or the glutamine), but talk to your doctor, who will alter your drug dosages as necessary.

Lemon balm (*Melissa officinalis*): I frequently recommend this herb to help people sleep and relieve minor digestive troubles. You can buy it dried, and make tea out of it, or you can buy commercial supplements in capsule or tablet form. Lemon balm has several different mechanisms of action, however. One of its effects is to increase levels of GABA. This means that the combination of lemon balm with antianxiety medications will cause an additive effect (and more side effects or excess sedation).

Marijuana: Marijuana users should not take anything that has a sedative effect. The enhancements caused by the combination could slow breathing and heart rate excessively.

Anticoagulants (Blood Thinners)

Examples: Aggrenox, aspirin (called acetylsalicylic acid in some countries), Coumadin (warfarin), heparin, Lovenox, Plavix (clopidogrel), and Ticlid (ticlopidine).

These medications are used to prevent blood clots, pulmonary embolisms, and strokes. But clotting itself isn't a

bad thing. If we didn't have the ability to clot, we would bleed to death from a paper cut. Whenever we hurt ourselves and bleed, specific cells called platelets clog up the hole in the blood vessel by clumping together to form a plug in a process called platelet aggregation. The plug gets stronger when other clotting factors in the bloodstream huddle around it and form a stronger meshwork.

Vitamin K is involved in this process because it helps you make clotting substances. In people with impaired blood flow due to hardening of the arteries, excess cholesterol, plaque in the arteries, and so forth, the platelets just stick to the artery wall and impede blood flow to the brain (causing a stroke) or to the heart (heart attack). This is why certain medications are used to try to prevent platelet aggregation or to thin the blood. Each anticoagulant works in its own way to prevent the formation or sticking of blood clots.

Coumadin (warfarin) works by preventing the production of clotting factors in the liver, so it's the drug of choice to prevent clots that occur deep in the veins. Sometimes, the blood just gets too thick, and that's where aspirin seems to help the most by keeping the blood thin and keeping the platelets from sticking together.

Here is what you need to know about anticoagulants and food.

Salads and leafy greens: These foods contain a lot of vitamin K, which helps blood-clotting substances thicken your blood, so to speak. This means that if you eat a lot of salads, you will require higher dosages of Coumadin. *Note:* These foods should not be a problem if you take Plavix. I'll never tell you to give up leafy greens because they are healthy for you in so many ways. My opinion is to stay consistent, and this concurs with the opinions of other top-notch experts; eat about the same amount of these foods on a daily basis, say one salad per day and one serving of sautéed kale, chard, spinach, or broccoli, and so forth. Your doctor will be able to adjust your Coumadin dose accordingly. Once your dosage has been firmly established, if you change your regular eating habits,

your drug levels may spike or plunge. Therein lies the problem.

Feverfew: This herbal supplement is prized for its ability to ward off migraines and allergies. It can thin the blood, as do many herbs, and therefore the combination of feverfew with blood-thinning drugs causes too much blood thinning, possibly leading to easy bruising, nosebleeds, or GI bleeds.

Garlic, ginger, turmeric, and ginkgo biloba: These may increase bleeding because they are so fantastic at keeping your blood thin all by themselves.

Saw palmetto: It may increase bleeding, so use with caution.

Onions: More than a few ounces seem to increase blood warfarin levels.

Excess vitamin supplements: Vitamin E (greater than 400 IU per day) and vitamin A (greater than 10,000 IU per day) can thin the blood excessively when combined with blood thinners.

Citrus juice and vitamin C: They might reduce the absorption of certain blood thinners, including warfarin.

Green tea and matcha tea: These teas have powerful effects on the arteries, helping to unclog them and thinning the blood slightly. This is a good thing, but after a few days or weeks of regular consumption, you will need to ask your doctor to lower your medication dose.

Grapefruit and its juice, and pomegranate and orange juices: Grapefruit can increase levels of certain blood thinners to a dangerous extent. For a complete list of medications that interact with grapefruit, see page 88. Pomegranate juice and orange juice appear to act in a similar way, so they may cause the same complications.

Soy milk: This may increase bleeding.

Avocado: This nutrient-rich food seems to reduce the effect of warfarin. Many practitioners warn against eating it. However, I think it's fine because it's packed with the antioxidant glutathione. Simply have your doctor adjust your

medication dose to accommodate your dietary preferences, and stay consistent with avocado consumption.

Coenzyme Q10: This may slightly reduce the effect of your blood thinner. I would not give this nutrient up, though. It's a powerful antioxidant, and it protects the heart. I think it's worth having your doctor make a slight adjustment to your drug dosage if needed.

St. John's wort: This reduces the effect of blood thinners, most notably warfarin, so you'll need a higher dose.

Anticonvulsants

Examples: Depakene and Depakote (valproic acid), Dilantin and Phenytek (phenytoin); Gabitril, Keppra, and Klonopin (clonazepam); Lamictal and Lyrica (pregabalin); Mysoline (primidone); Neurontin (gabapentin); Nootropil, Phenobarbital, and Tegretol (carbamazepine); Topamax and Trileptal (oxcarbazepine); Valium (diazepam); Zarontin (ethosuximide); and Zonegran (zonisamide).

There are a lot of drugs in this class, and they are usually taken long-term, or for a lifetime. These drugs are taken every day and are most often used to control seizures in patients with epileptic disorders. These are not prn (*pro re nata*) drugs; prn drugs are used once in a while when needed. Anticonvulsants can also be used to manage nerve pain, trigeminal neuralgia, headaches, migraines, chronic pain, and complications from other medical conditions. Neurologists use these drugs very carefully because they have dangerous side effects. Adjusting and perfecting the dosage for these medications requires careful analysis of your kidney and liver function. Your doctor will routinely test your blood if you take any of these medications to determine whether your body is capable of processing the dosage you take. This is important because anticonvulsant drugs have a small window of effectiveness before they become toxic. The meds do not cure epilepsy. The goal of treatment is to cut down on the number of seizures experienced. Here is what you need to know to keep yourself safer on anticonvulsant medication.

Alcohol: Drinking interferes with your medicine, so you don't have full protection from the drug. You could have a seizure more easily. Alcohol also adds to the sleepiness and slow heart rate induced by anticonvulsants. This additive effect is dangerous.

Antacids: They will suppress your ability to absorb these important medications. Separate their administration by 4 hours.

Borage oil and evening primrose oil (EPO): These essential fatty acids are wonderful dietary supplements, but they seem to increase the risk of seizures, according to some research. Why this happens is not clear, but avoid this combination if you have poor seizure control or take anticonvulsants.

Rice, bananas, and other constipating foods: Anticonvulsants can be constipating, and these foods may worsen the problem.

Valerian root: This herb is often used for relaxation, sleep, and seizure management. Combining it with anticonvulsant meds can add to the sedative properties, slowing heart rate and breathing.

Ginkgo biloba: This supplement is often used to improve memory, sex drive, and circulation. A very small study suggests that it can increase the risk for seizure, so this herb may work against your medication.

Grapefruit and its juice: Definitely avoid this if you take Tegretol or Trileptal and probably most of the other drugs on the list.

Fiber supplements: Metamucil and other psyllium-based products can reduce the effectiveness of your anticonvulsant medication.

Folic acid: These meds are drug muggers of folic acid, and you should separate taking the vitamin and the drug by at least 4 hours. If you take the folic acid at the same time as the medication, you might weaken the drug's action.

Antidepressants and Mood Modifiers

Examples: SSRI antidepressants include drugs such as Celexa (citalopram), Lexapro (escitalopram), Paxil (paroxetine), Prozac (fluoxetine), and Zoloft (sertraline). Tricyclic antidepressants include amitriptyline, desipramine, doxepin, imipramine, and nortriptyline. Other antidepressants include Cymbalta (duloxetine), Effexor (venlafaxine), Pristiq (desvenlafaxine, the active metabolite of venlafaxine), Remeron (mirtazepine), and Wellbutrin (bupropion).

As a class, these medications are prescribed to ease symptoms of depression, pain, panic attacks, social anxiety disorder (severe and debilitating shyness), and obsessive-compulsive disorder. Nonlabeled uses for some of these drugs include bed-wetting, fibromyalgia, and migraine management. Some of the drug–food interactions of the numerous drugs in this class are listed here.

Coffee, tea, soda, and chocolate: SSRI antidepressants (Celexa, Prozac, Paxil, Zoloft, and Lexapro) can cause the jitters, tremors, anxiety, and insomnia as side effects. Including caffeinated coffee, tea, or soda in your diet can increase the severity of these effects. Note that chocolate also contains a small amount of caffeine.

Alcohol: It suppresses brain chemicals and may work against your medication. With some antidepressants, particularly those in the class of the tricyclics such as nortriptyline and amitriptyline, drinking alcohol can increase sedation and slow breathing. This is also a dangerous interaction with Remeron (mirtazepine), which causes a great degree of sedation all by itself.

Food: Some antidepressants can cause weight gain as a side effect. Monitor meals and try to include healthy foods rather than just empty comfort foods that will only add to your weight gain.

5-HTP: This supplement is a direct precursor to serotonin, and you can buy it at any pharmacy or health food store.

People take it to reduce carb cravings, to improve mood, and to reduce pain in the body. It works by increasing serotonin levels in the body. A lot of people take 5-HTP with their mood drugs, but I never recommend it. It could cause a problem for people who have poor liver function, take excessive amounts of 5-HTP, or take high dosages of prescribed medication. The problem is that the medications do the same thing 5-HTP does—build up your serotonin levels. Too much of this lovely hormone can result in a dangerous condition called serotonin syndrome. In some cases, the excessive serotonin can cause life-threatening symptoms.

St. John's wort: I wouldn't feel comfortable combining this with prescribed antidepressants for the same reason I don't recommend 5-HTP. It also builds up serotonin levels.

Tyrosine: Some people take this natural amino acid when they have tremors, Parkinson's disease, or hypothyroidism. Tyrosine undergoes a chemical reaction in the body and helps make both dopamine and thyroid hormone. When combined with certain antidepressants that also make dopamine, you could end up with too much dopamine in your body. Heart palpitations are just one quick way to know if you are getting too much tyrosine. I'd stay away from it altogether if you take antidepressants (or a prescribed thyroid hormone).

Arthritis Medicines

Examples: Acetaminophen (Tylenol); aspirin (plain or entericcoated), celecoxib (Celebrex) and its infamous sister rofecoxib (Vioxx), which is no longer on the market; ibuprofen (Motrin, Advil); ketoprofen (Orudis); nabumetone (Relafen); and naproxen (Aleve, or by prescription, Naposyn and Anaprox).

When you hurt yourself or suffer from a sports injury or arthritis, your body creates all sorts of inflammatory chemicals. One of these classes of chemicals is prostaglandins, or PGs. Even though the PGs are incredibly important and have useful functions (like protecting your stomach lining from the surrounding acid), excessive PG chemicals are not good and can promote inflammation, pain, or fever. That's

where the drugs come in. By suppressing your body's production of certain PGs, they can reduce pain, inflammation, and fever.

This is why many cold formulas and premenstrual syndrome (PMS) products contain ibuprofen, the most common one of the bunch. Most anti-inflammatories are classified as nonsteroidal anti-inflammatory drugs or NSAIDs (pronounced *N-sedz*). They bring relief within a few hours. A very popular pain reliever, Celebrex is available by prescription. It works very selectively and has less impact on the stomach, meaning it is less likely to cause stomach bleeding or ulceration like NSAIDs can. On the other hand, Celebrex has a higher likelihood of causing high blood pressure, heart attack, or stroke, especially in sensitive, predisposed people. Here's what you need to know.

Alcohol: This combination can increase the risk of a GI bleed or liver damage.

Garlic and ginger: These can thin the blood and slightly increase the risk of bleeding when combined with NSAIDs.

Panax ginseng, red clover, white willow, ginger, and ginkgo biloba: The combination of any of these with arthritis medication may cause an additive blood-thinning effect.

Salt substitutes: These contain potassium. NSAIDs sometimes cause potassium retention in the body. The combination can cause potassium overload (hyperkalemia), with symptoms including nausea, fatigue, and muscle weakness.

Aspirin (Acetylsalicylic Acid)

Examples: Alka-Seltzer products, Ascriptin, Aspergum, Bayer, Bufferin, Ecotrin, Goody's, Halfprin, Norwich, St. Joseph, and certain Anacin products. In prescription formulas, you find aspirin in Darvon Compound, Endodan, Fiorinal, Percodan, and Soma Compound.

Aspirin has many uses and appears in hundreds of OTC products. Today it's primarily used as a blood thinner to help

prevent stroke and heart attack. Doctors often tell their patients to take it once a day. The substance is derived from the bark of the white willow tree. The use of aspirin (and its predecessors) is centuries old. It can reduce fever, but it's even better at reducing pain and inflammation. That's why you find it in so many prescription pain relievers. Here's what you need to know in order to be safe while taking aspirin products.

Alcohol: Aspirin and alcohol have some ability to poke teeny tiny holes in your gut, so the combination could increase your risk for a gastrointestinal bleed.

Garlic and ginger: These are excellent at thinning your blood, and I always recommend that people eat them. But combined with aspirin, the blood-thinning effect can become too pronounced and result in easy bruising, nosebleeds, or GI bleeds.

White willow tea: Taking aspirin and drinking this tea can also thin your blood to an extreme.

Green tea and matcha tea: I think these beverages can thin the blood just as well as aspirin. If you drink a lot of green tea, ask your doctor about stopping the drug. (Some say that too much green tea may contribute to kidney stones. The jury's out on this, so drink it in moderation.)

Iron supplements: These are hard on the GI tract, as is aspirin. The combination of both could increase risk of gut problems, particularly bleeding.

Bone-building drugs: These are notorious for their ability to damage the delicate mucosal lining of the esophagus. These are supposed to be taken first thing in the morning on an empty stomach, and you are not to lie down for at least 30 minutes after taking the drug. My advice is to *not* combine this class of medication with aspirin-containing products.

Beta-Blockers (Blood Pressure Medicines)

Examples: Acebutolol (Sectral), atenolol (Tenormin), bisoprolol (Zebeta, Ziac, Cardicor), carteolol (Teoptic eyedrops), carvedilol (Coreg), carvedilol betaxolol (Kerlone tablets and Betoptic

eyedrops), celiprolol (Cardem, Celectol, Celipro, Celipress Dilanorm, Selectol), esmolol (Brevibloc), labetalol (Normodyne, Trandate), levobunolol (Betagan eyedrops), metoprolol (Lopressor, Toprol XL), nadolol (Corgard), oxprenolol (Slow-Trasicor, Captol), pindolol (Visken), propranolol (Inderal), sotalol (Betapace), and timolol (Blocadren tablets, Timoptic eyedrops).

This class of drugs is enormous. There are many types and subtypes of beta-blockers. They are known as beta-blockers because there are beta receptors on your cells and these drugs sit at the doorway like a Rottweiler, preventing other chemicals from latching onto the cell. By blocking the beta doorways (receptors), the drugs block nerve impulses that would otherwise make your heart beat too fast or your blood pressure rise. So beta-blockers slow down the heart.

When you stress out, exercise strenuously, or have great sex, you release a lot of adrenaline (which, by the way, is also your fight-or-flight hormone). This can cause your heart to beat like crazy and make your blood pressure rise.

Beta-blockers are especially useful in these instances because they block the effect of adrenaline on your heart rate. Sometimes they are prescribed for people who have to do public speaking or other events where their heart rate and blood pressure increase from anxiety.

Beta-blockers reduce blood pressure, prevent angina (chest pain), treat heart failure, and attempt to normalize heart rhythm. Some beta-blockers work in the eye to reduce pressure there, which is why glaucoma eyedrops appear on my list. Certain meds in this class decrease the frequency of migraine headaches. Here are some drug–food interactions that you need to know about if you take a beta-blocker.

Potassium supplements: Your doctor should routinely measure your potassium level. You want them to remain in the normal range. If your potassium level gets too high or too low, then your beta-blocker will cause more complications. If you are taking diuretics that cause potassium loss (like hydrochlorothiazide or furosemide), make sure to get enough

potassium each day so you don't run low, especially if you also take a beta-blocker.

Alcohol: Beta-blockers slow the heart rate down. Alcohol does that, too, so it has an additive effect. Beta-blockers can be dangerous in some people because they slow breathing and heart rate. The combination of beta-blockers and alcohol can be so severe that it actually stops the heart. If your health-care provider tells you to drink a glass of red wine with dinner, make sure your medication dose is lowered to accommodate the alcohol intake.

Orange juice: Don't drink this with atenolol (Tenormin) or celiprolol. Wait at least several hours because orange juice reduces the availability of the drugs. There isn't enough data to extrapolate whether this effect applies to all beta-blockers, but to be safe, just separate administration of the two.

Animal products: Protein (meats) may increase drug levels. In one study, the combination of propranolol with a protein-rich meal increased the bioavailability of the drug by 53 percent! This boost is dangerous because it can cause lightheadedness, dizziness, fainting, and slowed heartbeat.

Salt substitutes: These can increase your potassium levels because that's what's in the salt substitute—potassium chloride. Some blood pressure pills, especially the ACE inhibitors (angiotensin converting enzyme inhibitors) and related ARBs (angiotensin II receptor blockers), when combined with the salt substitute, can cause hyperkalemia, or excess potassium in the blood. ACE inhibitors include captopril, enalapril, lisinopril, quinapril, and moexipril; ARBs include Atacand, Cozaar, Diovan, Micardis, and Avapro. Symptoms include nausea, fatigue, and muscle weakness.

Licorice: Natural licorice, found in some candies, can cause salt and water retention, which increases your blood pressure and acts against your medication.

Bone-Building Drugs: Bisphosphonates

Examples: Aclasta, Actonel, Boniva, Didronel, Fosamax, and Fosavance.

These extremely popular medications belong to a class of drugs known collectively as bisphosphonates. They are approved for use in the United States, Canada, and more than 60 other countries to prevent or treat osteoporosis—the loss of bone density, or simply put, the crumbling of bones that leads to kyphosis, fractures of the spine, broken bones, and hip fractures. You see these medications prescribed primarily to postmenopausal women who are at higher risk for bone loss as a result of waning estrogen levels. On occasion, they are given to men. They are also prescribed to people who take steroid medications, which cause bone brittleness. Guess why? Because steroids are drug muggers of your minerals, especially calcium and magnesium. So when bone mass declines, in come the bone-building meds.

Bisphosphonates work by taking up residence on the surface of your bones. They sit in the doorways of your bone cells and slow down the process of bone erosion. The mechanism is complicated, but essentially their presence allows bone-building cells (osteoblasts) to work more effectively.

You must take these drugs on an empty stomach first thing in the morning with plenty of water because they're really hard on the gut and can damage or create an ulcer in the delicate lining of the esophagus in sensitive individuals. Don't even lie down for at least 30 minutes after you take the medicine; sit up or stand so it can go all the way down.

There is some research suggesting that these medications may cause bone death in the jaw (osteonecrosis). However, drugmakers say that it's too early to conclude that this condition is related to bisphosphonates. Here's what you need to know if you must take these medications.

Calcium supplements: These may affect the absorption of bone drugs. If you take the two together, the calcium and the drug will latch onto one another like reunited lovers. Their binding may significantly reduce the drug level. Conversely, people being treated with bone-building medication often have low calcium blood levels. Check with your physician or pharmacist prior to taking supplements containing calcium or vitamin D and, if you do take them, make sure to take the

supplement at least 2 hours before or after taking the medication.

Iron supplements: The combination fosters another type of reaction that grabs hold of your medicine and reduces the drug level, just like calcium. Take it at least 2 hours before or after your medicine.

Antacids: These often contain calcium or magnesium, both of which affect absorption of the bone-building medication. Separate your bone drug and antacid by at least 2 hours.

Trace minerals: Take this dietary supplement at least 2 hours before or after your medication.

Breathing Medications (Bronchodilators)

Examples: Albuterol (AccuNeb, ProAir HFA, Proventil HFA, Ventolin HFA), albuterol and ipratropium (Combivent), ipratropium (Atrovent), levalbuterol (Xopenex), montelukast (Singulair), theophylline (Slo-Bid, Theo-Dur, Uniphyll), and zafirlukast (Accolate).

These medications are known as bronchodilators. They increase air flow in your lungs and can relieve shortness of breath and wheezing. They are most often used for bronchial asthma, but many people with restricted airways or emphysema take them. Certain medications in this group are used for chronic bronchitis and respiratory infections.

Breathing medications can be further divided into three subgroups that I will outline shortly. The drugs in these subclassifications may work differently in the body, but they all seek to do the same thing: dilate your airways, or bronchioles, allowing for greater oxygen exchange. They are categorized as bronchodilators as a result. Here are the three basic classes: beta2-agonists (albuterol and levalbuterol); anticholinergic bronchodilators (ipratropium); and methylxanthines (theophylline).

There is a relatively new class of medications to help people with asthma called *leukotriene receptor antagonists* (LTRAs for short). Singulair (montelukast) and Accolate (zafirlukast)

are in this category. They are used to prevent asthma symptoms, often in conjunction with the breathing meds above. LTRAs work by blocking the action of certain natural substances in the body (leukotrienes) that tend to cause swelling and tightening of the airways. By blocking these substances, the drugs minimize breathing issues. They are too new to have a long list of drug muggers and interactions associated with them, but, as data trickles in, I will update you in my newspaper columns.

Breathing medications constitute one of the most useful medication classes on the market today. In fact, I've had to quickly dispense some inhalers to people with asthma right at the pharmacy counter to keep them alive or they literally would have collapsed. Make a note to yourself: Never run out of this medicine. Keep it with you at all times. Regardless of what type of medication you are prescribed, you need it to work well in order for you to breathe. There isn't much room to play with these drugs: Too little and you can't breathe; too much and you could suffer dangerous side effects. Please be vigilant with your medication dosage and study this list of drug–food interactions.

Caffeine: Tea, soda, coffee, and chocolate all contain caffeine. It's dangerous to combine caffeine with breathing meds because the meds contain a stimulant, too (xanthine). Your heart rate could speed to dangerous levels, and you could experience irritability, tremors, anxiety, chest pain, heart pounding, insomnia, shortness of breath, and cardiac arrhythmias.

Ma huang, panax ginseng, ephedra, licorice root, and bitter orange: These are stimulants, so the combination with breathing medications can be overtaxing.

Grilled meat: The combination of grilled meat and theophylline-based breathing meds can cause such a dangerous reaction that emergency intervention may be needed. It occurs because eating barbecued and grilled meat releases chemicals that keep your liver from eliminating the medicine properly. When this happens, your medication blood level soars to new heights. Danger!

High-carb meals: These may decrease the amount of theophylline in your body, suppressing its effect.

Alcohol: Drinking increases the risk of side effects such as nausea, vomiting, headache, and irritability.

Sugary desserts: Specifically avoid these when taking albuterol because the two together raise blood sugar.

Cough and cold medicines: If your medication contains a decongestant such as phenylephrine or pseudoephedrine (or ephedrine, which is available in other countries), it could stimulate the heart too much, behaving like caffeine. Remember, decongestants used in cough and cold medicines are derived from amphetamines.

Smoking: This keeps your breathing medicine from working by reducing its level in the bloodstream. Smoking is dangerous to your lungs, and you already need breathing medicine in the first place. Quit today. You can do it.

Hawthorne and motherwort: Combining either of these herbs with breathing medications may increase cardiac side effects.

Fiber and bran cereals: Separate intake of these from your breathing medications, including Accolate (zafirlukast), by at least 2 hours.

Diabetes Drugs

Examples: Actos (pioglitazone); Amaryl (glimepiride); Avandamet (rosiglitazone and metformin); Avandia (rosiglitazone); Byetta (exenatide); Diabinese (chlorpropamide); Glucophage, Glucophage XR, Glumetza, Fortamet, Riomet Liquid (metformin); Glucovance (glyburide and metformin); Glyset (miglitol); Janumet (metformin and sitagliptin); Januvia (sitagliptin); Metaglip (metformin and glipizide); Micronase (glyburide); Orinase (tolbutamide); Prandin (repaglinide); Precose (acarbose); Starlix (nateglinide); and Volix (voglibose). Injectable forms

of insulin include Humalog, Humulin, Lantus (insulin glargine), Novolin, and NovoLog.

There is an arsenal of diabetes drugs available. The various meds that I have listed may work in different ways. It would be too complicated to go through each mechanism of action here, but it should be enough for you to know that these medications all have one thing in common: They seek to lower the amount of blood sugar in your body or improve the way your body uses the insulin it has. Insulin, by the way, is what neutralizes blood sugar. If you can make your body more sensitive to the insulin that is hanging around, your blood sugar will remain within bounds.

As far as I'm concerned, it's the health of your pancreas that matters most. Unfortunately, we are seeing more and more pancreatic problems today, including pancreatitis and pancreatic cancer. Pancreatic problems are becoming more common and are probably the result of eating excessively processed foods, artificial additives, excessive refined white sugar, and/or too much high fructose corn syrup, or of having allergies to gluten or casein.

When blood sugar remains high long-term, problems come on slowly. They include frequent infections, vision problems, and damage to the brain, heart, and kidneys. On the other hand, low blood sugar (hypoglycemia) often brings on an emergency with symptoms of dizziness, shakiness, sweating, headache, confusion, fainting, and convulsions. Pay attention to the foods that might be a problem for you.

Potatoes, candy bars, and starchy foods: If you increase your blood sugar levels with these foods, then you'll need a higher dose of your medicine.

***Aloe vera* juice:** Some people drink this for constipation. It can lower blood sugar very nicely. When combined with medication, however, this effect is enhanced, and your blood sugar may plummet.

Stinging nettle: This incredibly useful herb actually grows like a weed in parts of North America, Europe, and Asia. Can you imagine? It can help men with prostate problems, sex

drive issues, and urinary tract problems. It helps women, too, by raising energy levels and reducing bladder problems. This herb is often used for allergies, and it can lower blood sugar just like your medication can, so combining nettle with diabetes meds might drop your blood sugar too fast. Monitor your blood sugar closely because your medication dosage may need to be reduced. Stinging nettle also nourishes the thyroid gland and can enhance your medication's effect. It's not a bad thing. Your doctor will just have to lower your drug dosage as the beneficial effects of stinging nettle become evident.

Alcohol: The use of alcohol should be avoided. It lowers your blood sugar, and when combined with insulin, the effect is additive. This will cause blood sugar to drop way below normal limits, causing hypoglycemia, bringing on cold, clammy skin, rapid heart rate, dizziness, weakness, fainting, and possibly seizures or death.

Diuretics: Prescription diuretics and natural herbal ones such as green tea, matcha tea, yarrow, goldenseal, asparagus extract, dandelion, and stinging nettle cause water in the body to be lost. That's the point. But a person who has diabetes already tends to urinate a lot because the increased glucose level in the blood causes water to be lost through urination. So I suspect that diuretics could cause dehydration in some people taking diabetes drugs.

Green drinks that contain spirulina or chlorophyll: This supplement may reduce blood sugar after a few weeks or months. Combining it with medications might make glucose drop too low. Just make sure you monitor your glucose level closely and have your doctor adjust your medications appropriately.

Diet pills and appetite suppressants: These reduce appetite. Insulin increases the munchies. It seems that this combination would be wise, but definitely not in my book. The reason is that diet pills and appetite suppressants often excite the heart and lower blood sugar. Insulin has effects on the heart, and it lowers blood sugar as well. When you mix the two, you don't know what's going to be the end result. It could cause a dangerous drop in blood sugar, sending it so low that it

affects the beating of your heart. I would avoid these supplements unless your doctor allows you to lower your drug dosage.

Fiber supplements: Separate these supplements from insulin and diabetes medication by 2 or more hours.

Vitamin D: This vitamin turns into a hormone in the body. It's best known for its ability to rev immune function and lower risk for autoimmune disorders and all types of cancer. Most people don't realize it also can greatly improve insulin sensitivity. This means that your body will respond better to circulating (or injected) insulin, and your blood sugar will go down. When combined with medications, your glucose could drop too low. It's a good idea to monitor your blood glucose closely if you are taking vitamin D long-term (more than a month) and have your doctor reduce your medication dosage as needed.

Blood sugar-lowering herbs: The following herbs and nutritional supplements may effectively lower blood sugar, and they should be used very cautiously if you are also taking medicine. Monitor blood sugar frequently when taking the following herbs, and be aware that medications and insulin dosages should be adjusted downward so you don't get hypoglycemic.

Fenugreek

Gymnema sylvestre

Bitter melon extract

Stinging nettle

Myrrh

Marshmallow

Alfalfa

Aloe vera

Holy basil

Curcumin/turmeric

Alpha-lipoic acid

Digoxin

Example: Lanoxin

This drug is a derivative of digitalis, a natural toxin that was once used on arrowheads as a deadly poison. Digoxin is used most frequently for congestive heart failure because it relieves shortness of breath and wheezing experienced while lying down. It may help with swelling in the hands and feet. It works by slowing down the heart, allowing the chambers to fill up with blood and to pump blood more efficiently, which could improve heartbeat rhythm. Side effects may include abdominal pain, nausea, vomiting, loss of appetite, skin rash, blurred vision, mental changes, and heart rhythm problems. People with chronic kidney disease need lower dosages than others. There is a very fine line between what's effective and what's dangerous, so heed the drug–food interactions very carefully. Because the drug has its primary effects on the heart, a drug–food interaction could have harmful consequences for the heart.

Oatmeal and bran cereal: The combination slows down the breakdown of the drug. This means that it lingers for a long time in your bloodstream without being processed and can cause more side effects. High levels of digoxin can lead to overdose and life-threatening arrhythmias.

Calcium: Excess supplementation with this popular bone-building mineral can lead to digoxin overdose.

St. John's wort: This herb reduces digoxin levels, which could mean therapeutic failure. If you want to take the herb, your doctor will have to increase your medication dose.

Erectile Dysfunction Medicines

Examples: Cialis and Adcirca (tadalafil), Levitra (vardenafil), and Viagra and Revatio (sildenafil).

Pills for erectile dysfunction (ED) are big business in the pharmacy, especially every Friday night, when the meds move like hotcakes. For now sex pills are reserved for men, but soon they will be prescribed for women too. The drugs rank among

the most expensive of our recreational drugs, at \$15 a pill. That's why Viagra is affectionately dubbed the blue diamond by many pharmacists. It's a blue pill in the shape of a diamond, and it's expensive.

To understand the way these drugs work, you must understand how the body naturally achieves an erection. First, there is some kind of stimulation, visual or physical, that triggers a biochemical reaction in the penis causing the blood vessels and muscles surrounding that organ to relax. This biochemical reaction involves the nitric oxide pathway; the greater the nitric oxide production, the more blood flow to the region. More blood flow to the penis and voila! Passion is possible. Sex pills work by allowing more blood to flow. They are taken 30 minutes to an hour before desired sexual activity, and some meds like Cialis are approved for use every day.

If you have to rely on these medications frequently, get your heart checked out because if the blood isn't flowing properly down south, it isn't flowing well up north either. Not all men with erectile difficulties have heart disease, but erection problems could be your first sign of it. Here is what you need to know about food interactions.

Grapefruit juice and pomegranate juice: These juices seem to be able to increase the blood level of sex pills, leading to dangerous side effects including headache, indigestion, flushing, vision disturbances, and abnormal heart rate. Grapefruit also delays absorption of the medication. It normally takes about an hour for these drugs to begin working, but if taken with grapefruit, it could take longer than an hour, increasing the risk of dangerous side effects (not to mention disappointment).

Over-the-counter sex enhancement pills: These often contain yohimbe and other herbs that affect blood circulation. The combination with prescribed ED drugs is additive and can lead to more side effects. In addition, these supplements may increase your risk of developing a painful, prolonged erection that requires medical attention. Repeat: painful!

Alcohol: Drinking can cause light-headedness and dizziness and so can the prescribed sex pills. The combination could

make you dizzy or faint. Also, both alcohol and ED drugs can cause headache or migraine, and the combination can make your head really hurt.

Hawthorne, devil's claw, mistletoe, fenugreek, figwort, shepherd's purse, digitalis leaf, and motherwort: These herbs affect the heart. Since prescribed sex pills may increase the likelihood of cardiovascular side effects, combining them with any of these herbs can be dangerous. In studies of sildenafil (Viagra), the following cardiac changes were noted with the drug alone: angina pectoris, atrioventricular block, tachycardia, palpitations, myocardial ischemia, cerebral thrombosis, cardiac arrest, heart failure, and cardiomyopathy. You certainly don't want to be taking an herb that can increase the likelihood of these effects.

Lithium

Examples: Apo-Lithium, Eskalith, Eskalith CR, Lithobid, and Lithotabs.

Lithium naturally occurs in the human body, and it's very calming. It boosts memory and helps with brain function. Some brands of sea salt contain a little lithium, too. The mineral affects the flow of sodium through nerve and muscle cells all over the body. Sodium affects excitation or mania. You can buy OTC supplements of lithium orotate in low dosages, and it can improve mood dramatically. It's also available in higher dosages with a prescription. Lithium is most commonly prescribed to lessen the intensity or reduce the number of manic episodes in people with manic depression, or bipolar disorder. The symptoms of this condition could include hyperactivity, rushed speech, poor judgment, reduced need for sleep, aggression, and anger. Lithium has a relatively small target range for what's effective as opposed to what is toxic. If it shifts even a little bit, it could become ineffective or toxic.

Table salt (sodium chloride): Too little salt can decrease the lithium level in the blood, while too much can increase it. Either way, the interaction can be dangerous. Ideally, you should drink about six glasses of water a day and stay consistent with your water and salt intake. The dosage of your

medication is determined by lab evaluations (blood tests), so it's actually based on your regular daily consumption.

Coffee, tea, soda, energy drinks, and chocolate: Caffeine can reduce serum levels of lithium. The trick is to keep the amount of caffeine-containing beverages you drink consistent from day to day. Less caffeine can cause your lithium level to increase; more caffeine can cause it to decrease. Consistency is key.

Food: Take lithium with food to prevent digestive upset.

MAO Inhibitors (Monoamine Oxidase Inhibitors) and St. John's Wort

Examples: Aurorix and Manerix (moclobemide), Azilect (rasagiline), Eldepryl (selegiline), Marplan (isocarboxazid), Nardil (phenelzine), and Parnate (tranylcypromine).

These medications possess some MAO activity: Furoxone (furazolidone) and Zyvox (linezolid), which are used as antibiotics, and Matulane (procarbazine), used as chemotherapy.

MAO inhibiting medications have been reserved to treat the most resistant forms of depression. In recent years, they have found new use for conditions such as headache, panic disorder, and Parkinson's disease. These medications have been somewhat effective, but they cause dangerous side effects. Like every drug, there is a risk-to-benefit ratio. With MAO drugs, there is a lot of risk for the benefit.

If you are prescribed one of these, be very careful about drug–food interactions. Most health-care practitioners have a list of do's and don'ts for these medications, so don't be shy about asking for any information that they can give you. The drugs work in part by raising levels of serotonin, so any herb or drug (even if it's not listed below) that raises the level of that feel-good hormone could interact dangerously with MAO meds.

MAO inhibitor drugs are among the most dangerous drugs in the world because they interact with so many foods, herbs, and beverages. The danger is in the sudden spike of blood pressure (vasoconstriction) that can happen when there is too much serotonin released in the body. This life-threatening complication is called *serotonin syndrome*, and symptoms include nausea, confusion, sweating, agitation, and unresponsiveness. MAO drugs interact with more than 200 different medications for one reason or another, so prescribing them to people who already take medicine can be tricky. Sadly, there have been some fatalities reported among users who didn't realize they were eating the wrong food. Here's what you need to know if you take an MAO drug.

St. John's wort: This is used for pain and to boost mood in depression. It's found alone or in combination with other herbs, and it acts on the brain in the same manner as MAO drugs, but to a much lesser extent. Don't combine it with MAO drugs, or within 2 weeks of their use. And while I'm talking about St. John's wort, even if you aren't on MAO inhibitors, stop using it 5 days before surgery to be safe because it has some blood-thinning properties and could affect your ability to clot properly while under the knife.

Ginseng: Phenelzine and other MAOs combined with ginseng supplements or drinks can cause insomnia, headache, tremors, and hypomania, which causes excessive energy, insomnia, unusual exhilaration or excitement, agitation, or depression. Avoid ginseng with MAO inhibitors.

Alcohol: It contains the amino acid tyramine, and this can interact with your medication. The interaction is so serious that it can cause a disastrous rise in blood pressure. Avoid beer, red wine, and liqueurs.

Cough and cold syrups: These usually contain dextromethorphan, a cough suppressant that interacts with the classic MAO medications and increases brain levels of serotonin, causing bizarre behavior. There has been at least one reported case of death. Avoid dextromethorphan while using St. John's wort, too. Steer clear of MAO medications for 2 weeks before using any cough or cold syrup.

Cheese: You can experience a problem with any kind of cheese, including Parmesan, mozzarella, Cheddar, blue, brie, Camembert, and so on. The same is true of sour cream. Cheese contains the amino acid tyramine, which reacts with MAO drugs in the same dangerous way as alcohol does. This reaction is extremely rare with St. John's wort.

Other foods: Avoid the following foods because they can interact with MAO drugs and cause a dangerous rise in blood pressure: yogurt, avocados (especially if they are very ripe), bananas, yeast extract, cured meats (such as sausage, salami, and pepperoni) and dried fish, caviar, raisins, sauerkraut, soy sauce, fava beans, and miso soup.

Coffee, tea, and soda: The caffeine in these drinks makes this combination spike blood pressure.

Diet pills and appetite suppressants: These contain ingredients that squeeze your blood vessels and increase your blood pressure. Do not take these products while taking an MAO drug, or within 2 weeks of stopping an MAO drug. If you do, you may suddenly develop extremely high blood pressure.

Nasal sprays: Afrin, Otrivin, and other nasal sprays that contain a similar ingredient can spell trouble for people taking MAOs, including St. John's wort. These drugs squeeze off your tiny vessels, increasing blood pressure just like MAO drugs. Be clear of your medicine for 2 weeks before using any of these nasal decongestants or taking cough and cold medicine. Ocean nasal spray, which contains saline, is a better choice because it is nonmedicated.

Eyedrops: Those that contain tetrahydrozoline (Visine) also cause vasoconstriction. Even though it goes into the eye, some of it gets absorbed into the bloodstream, where it could interact with MAO drugs, including St. John's wort, and spike blood pressure.

Metronidazole

Examples: Flagyl and MetroGel.

This antibiotic is effective against certain bacteria and parasites. It is classically used for giardia, an intestinal parasite that causes severe abdominal pain and diarrhea. It's often used to treat *Clostridium difficile*, an infection of the gut that occurs after the use of other strong antibiotics. Take a guess why *C. difficile* might easily overtake the gut after another antibiotic. Yep, drug mugging antibiotics kill normal beneficial flora, allowing other, bad bugs to take over. *C. difficile* is dangerous, and these types of infections are common in hospitals and nursing homes. Read about probiotics in Chapter 17 on page 221 to find out how to replenish what drug mugging antibiotics steal.

Metronidazole can also be used for vaginal infections and for certain sexually transmitted diseases in both men and women. It's used to treat trichomoniasis, a vaginal infection that causes vaginitis. It can also be used for deep lung infections, meningitis, and many other hard-to-treat bugs. Here's what you need to know if you have to take metronidazole.

Alcohol: This combination could kill you, according to a report published in the *American Journal of Forensic Medicine and Pathology* in 1996. Sudden death is possible, but not very common. More often, people experience projectile vomiting, dehydration, headaches, stomach cramps, nausea, heart palpitations, shortness of breath, and heat flushing. Those things don't happen to everyone, but when they do, it is not pretty. Some individuals are so highly sensitive to alcohol in combination with their meds—it's called a disulfiram reaction—that they can't even spray perfume or cologne on their skin because the alcohol in it reacts with the metronidazole medication. Cough syrups that contain alcohol are also a no-no. I always recommend steering clear of anything with alcohol while on this medication and for several days after your course of therapy has been completed.

Nitrates

Examples: Isosorbide dinitrate (Isordil, Dilatrate-SR, Coronex, Apo-ISDN), isosorbide mononitrate

(Imdur, Monoket, Ismo), nitroglycerin (Nitrostat, Nitrolingual spray), and skin patches like Nitro-Dur and Transderm-Nitro.

Chest pain (angina) is often caused by the buildup of fatty cholesterol plaques that block blood flow to the heart. The insides of the coronary arteries become narrowed with the gunk. When you have chest pain, it's your body's way of telling you that your heart is suffocating and not getting enough oxygen as a result of the reduced blood flow. Nitrates temporarily widen (dilate) your arteries and improve blood flow to the heart. They are most frequently prescribed for people with angina or congestive heart failure. Nitrates don't alter the course of angina, nor do they cure it, but they do relax your blood vessels and allow them to dilate, which takes the strain off the heart because blood flows to it more easily. Side effects include dizziness and headache (because more blood is also flowing to the head), as well as facial flushing, upset stomach, and low blood pressure. Some people experience a change in heart rhythm, fainting, and restlessness. Here is what you need to know in terms of drug–food interactions.

Alcohol: This can relax blood flow by widening arteries, so combining it with nitrate drugs can result in dangerously low blood pressure.

Arginine supplements and sex enhancement vitamins that contain arginine: The amino acid arginine is used to improve erectile dysfunction and also to increase blood flow to the heart in people with coronary artery disease. The problem is that arginine-containing products can cause a dangerous drop in blood pressure when combined with nitrate drugs. (The same interaction is possible for medications such as Levitra, Cialis, and Viagra.)

Nicotine products: These negate the effect of nitrate medication.

Oral Contraceptives and Hormone Replacement Therapy (HRT)

Examples of oral contraceptives: Activella, Alesse, Apri, Aviane, Camila, Depo-Provera shot, Estrace, Estraderm, Estring, EstroGel, Estrostep, Femring, Levlen, Levlite, Loestrin, Lo/Ovral, Menostar, Micronor, Mircette, Modicon, Necon, Nordette, Norinyl, Nor-QD, NuvaRing, Ogestrel, Ortho-Cept, Ortho Evra patch, Ortho-Novum, Ortho Tri-Cyclen, Ovcon, Ovral, Seasonale, Tri-Levlen, Tri-Norinyl, Triphasil, Yasmin and Yaz, and Zovia.

Examples of hormone replacement therapy: Climara, CombiPatch, estradiol, FemHRT, Ogen, Premarin, Prempro, other estrogens (bioidentical hormones and natural soy isoflavones).

These types of drugs contain a synthetic hormone that is similar to the one produced naturally in your body. There is a lot of hoopla about hormones now as we debate the use of synthetic hormones versus bioidentical ones.

It's the synthetic ones that I want to discuss here, because these drugs are man-made and are not completely recognized by our bodies. They are recognized by our cells just enough to get into the doorway of the cell and do a small amount of work. But then they persistently stick to these cells, and therein lies the problem.

Hormone replacement therapy (HRT) drugs are used primarily to control hot flashes, night sweats, and possibly bone loss associated with declining estrogen. These medications have widespread effects in the body, including numerous side effects and a host of drug–food interactions. Refer to Chapter 1 to learn how to overcome the drug mugging effect of HRT and contraception. Take a look at the most common drug–food interactions.

Vitamin A dietary supplements: A study utilizing a popular oral contraceptive (Ortho-Novum) found that it could increase the blood level of vitamin A, so combining it with high doses (greater than 10,000 IU per day) could cause a buildup of vitamin A. The potential exists for a high level of A to become toxic, causing temporary skin discoloration (yellowing), diarrhea, easy bruising, and arthritis. It is worth

noting that problems with vitamin A and hormone medications do not occur if you take beta-carotene, a plant-derived precursor of vitamin A.

Coffee, tea, soda, and chocolate: Hormones increase the effect of caffeine. This combination can leave you feeling jittery, irritable, or hyper, and may cause nausea and tremors.

Diet pills, appetite suppressants, and energy drinks: Some of these contain guarana, yerba maté, bitter orange, or ma huang and can be stimulating. Hormones tend to be stimulating as well, so the combination can cause the same problems as caffeinated drinks. See the section above.

Grapefruit juice: This citrus juice can significantly raise estradiol levels in the body. Estradiol is the most common form of estrogen found in oral contraceptives and most HRT drugs such as Estrace, Climara, Estraderm, Estring, Activella, Femring, CombiPatch, EstroGel, Menostar, and many others. One study found that grapefruit juice can also increase the levels of conjugated estrogens (Premarin, Prempro) by up to 30 percent, increasing the risk for harmful side effects.

Herbs such as chasteberry, black cohosh, licorice, motherwort, saw palmetto, and wild yam: These herbs work on the same hormonal systems as the drugs and may interfere with your medicine.

Pain Relievers (Opiate Analgesics)

Examples: Codeine or codeine and acetaminophen (Tylenol 3), fentanyl patches (Duragesic, Actiq), hydrocodone with acetaminophen (Vicodin, Lortab), meperidine (Demerol), morphine sulfate (MS-Contin, Roxanol), oxycodone with acetaminophen (Percocet, Roxicet, Tylox), propoxyphene with acetaminophen (Darvocet-N 100), and tramadol (Ultram, Ultracet).

Opiates and their derivatives are usually prescribed for patients going home after surgery, childbirth, or dental work. They also ease back pain, headaches, arthritis, and pain from broken bones. Opiates are effective at relieving pain, and I'm

one of those pharmacists who believe in their use as long as there is a genuine indication, but many clinicians are afraid of these drugs because physical dependence occurs after a few weeks. It's common for people to need more and more medication to confer the same pain-relieving effect as the body grows tolerant to lower doses, but if you have chronic pain, so what? No one should have to suffer as far as I'm concerned.

Opiates were created and intended for short-term use, not forever. I have seen many people who cannot go without the medicine because it provides relief from their chronic and intractable pain. The way they work is not completely understood, but in part they reduce levels of substance P, a chemical in the body that causes the sensation of pain. These medications can cause excessive sleepiness, confusion, slowed breathing, reduced heart rate, and constipation. The nausea and vomiting that is sometimes caused by these drugs can be minimized if they are taken with food.

Alcohol: When combined with painkillers, heart rate and breathing slow down and the heart can stop.

Kava: This natural herb is used as a muscle relaxant, an anticonvulsant, an antianxiety med, and a sleep aid. It acts on the nervous system in the same way as painkillers, and the sedative effect can be additive. Don't combine.

Bananas, rice, and other constipating foods: Painkillers are very constipating, and these types of foods can add to your discomfort. Prunes are good for people who take opiate analgesics.

Sedating herbs: When combined with painkillers, passionflower, hops, lemon balm, and other sedating herbs slow down your heart rate and breathing. They can even stop the heart in sensitive people.

Potatoes and apples: These foods are high in pectin, which slows down the effect of your medicine. Other foods containing a lot of starch or fiber can have the same effect.

Smoking: This can reduce the effectiveness of your painkiller because it speeds the processing and elimination of

the drug. The faster the drug goes through your system, the less time your body has to extract any benefit from it.

Potassium-Sparing Diuretics (Water Pills)

Examples: Aldactone (spironolactone), Dyazide, Dyrenium and Maxzide (triamterene), and Midamor (amiloride).

These drugs are used to treat high blood pressure. They make you urinate more by forcing your kidneys to dump out more sodium, which takes water with it. The water it takes comes from your blood, so the pressure in your blood vessels goes down. Makes sense, right? Although most other diuretics cause you to lose potassium along with the sodium, this class of drugs retains potassium in your body. Sometimes you will see them combined with diuretics that spill potassium, like furosemide.

Potassium-sparing diuretics are often prescribed with different types of blood pressure medications, which control heart rate and pressure in the vessels. What's important here again is the potassium. You have to maintain the proper level, regardless of which diuretic you are using. If your potassium falls too low, you will get hypokalemia, a dangerous condition that can slow or stop your heart and cause nausea, fatigue, and muscle weakness. Here is what you need to know to stay safe while taking potassium-sparing diuretics.

Bananas, asparagus, squash, leafy green vegetables, and orange juice: These foods are rich in potassium. Since the water pill is causing you to hold onto potassium, you may get too much—hyper-kalemia—which can affect heart rate and muscle coordination.

Salt substitutes: These contain potassium and can cause potassium overload when combined with potassium-sparing diuretics.

Monosodium glutamate: If you are sensitive to monosodium glutamate (MSG), a common food additive, the use of potassium-sparing diuretics can make you even more sensitive.

Stinging nettle supplement and tea: Many people take this dietary supplement for prostate problems or allergies. It removes potassium from the body, so even though it enhances water loss, it may alter potassium levels and work against this type of diuretic.

Dandelion: A popular dietary supplement, dandelion is a mild potassium-sparing diuretic. The combination may produce a dangerous increase in potassium levels.

Quinolone Antibiotics

Examples: Cipro (ciprofloxacin), Floxin (ofloxacin), Levaquin (levofloxacin), Maxaquin (lomefloxacin), and Noroxin (norfloxacin). (Megalone, Omniflox, Raxar, Tequin, and Trovan have been withdrawn from the market.)

These medications are used to treat infections and are particularly good at penetrating hard-to-reach tissue like that in the urinary tract, kidneys, and prostate. They can successfully treat life-threatening cases of Legionnaires' disease and pneumonia. Quinolones are often prescribed long-term (for more than 7 days) because the bad bugs are stubborn about retreating.

However, overprescribing of quinolones has contributed to the sobering problem of resistance. In July 2008, the FDA told makers of quinolone antibiotics to issue a black box warning about the potential for tendon rupture or tendon injuries. The warning didn't surprise me. But for tendon rupture? That was unexpected, given all the other serious side effects these drugs can have, including irreversible nerve pain, burning, tingling, numbness, weakness, and a feeling of vibrations under the skin. Quinolones have been linked to liver failure, irreversible neuropathies, and even toxic psychosis. A warning about quinolones causing tendon rupture is the equivalent of warning smokers that their cigarettes will cause bad breath. Spare me.

I recommend that you immediately discontinue your medication if you experience the side effects listed above. Other side effects include changes in heart rhythm, depression,

anxiety, difficulty concentrating, and a strange dissociation with reality or people. These may be a result of the drug mugging effect of the medication. Here are the drug–food interactions with quinolones.

Dairy products: Milk, cheese, yogurt, and butter all contain calcium. Calcium can bind to your antibiotic and suppress its effect, so you don't heal properly and need a second go-around.

Calcium supplements: As above, the calcium diminishes the effect of your antibiotic.

Multivitamins: These often contain minerals such as iron, magnesium, zinc, and calcium, which could attach to your antibiotic and reduce its effectiveness.

Antacids: Products such as Maalox, Mylanta, and Gaviscon contain aluminum, calcium, and/or magnesium, all of which can latch onto the antibiotic and dramatically diminish its effect in the bloodstream. This happens because the aluminum, magnesium, and calcium grab the fluoroquinolone antibiotic and take it out of the body before it can work on your infection.

Iron supplements: These include Feosol, Nu-Iron, Niferex, ferrous sulfate, ferrous gluconate, iron bisglycinate, chelated iron, and others. Iron attaches to your antibiotic, reducing the bioavailability of your drug and therefore decreasing its effectiveness.

Zinc: These supplements or lozenges, often used for sore throats, coughs, and colds, can latch onto the antibiotic, making it less effective.

Trace minerals supplement: The minerals attach to your antibiotic, reducing the drug's effectiveness.

Birth control pills: Antibiotics (all of them) make your birth control pills less effective because they strip the gut of beneficial flora. You need flora to absorb the Pill, so you become more susceptible to pregnancy whenever you take an antibiotic. Use a second method of contraception during the course of the antibiotic and for 10 days thereafter.

Coffee, tea, and soda: Quinolone antibiotics tend to be stimulating and cause the jitters, irritability, anxiety, and insomnia, so avoid caffeine-containing beverages that enhance this effect. Beware: Diet pills often contain caffeine and ma huang, which acts just like caffeine. The likelihood of these uncomfortable side effects goes up if you combine the quinolone antibiotic with an OTC pain reliever like ibuprofen or naproxen and caffeine.

Sleeping Medications

Examples: Ambien or Ambien CR (zolpidem), Klonopin (clonazepam), Lunesta (eszopiclone), Restoril (temazepam), Rozerem (ramelteon), Sonata (zaleplon), and Xanax (alprazolam).

Sleeping pills have become fast movers in the pharmacy. We sell so many of these drugs that I think everyone must be up at 2:00 a.m. watching infomercials on how to steam clean grout or get a six-pack of abs. My problem with sleeping pills in general is that the sleep they induce is really not natural, refreshing, or restorative. True, you are in a sleep-type funk, if you will, but it's artificial. All the drugs in the list above (with the exception of ramelteon) trigger the release of one relaxing brain chemical called GABA, and GABA floods your brain and makes you sleepy. It slows everything down, in fact, including heart rate and breathing. Ramelteon increases melatonin, not GABA, and melatonin helps you stay asleep at night.

These medications were designed to be temporary fix-me-ups, but I've seen physicians prescribe them to people for years at a time. They were not intended to treat chronic insomnia. I agree that the thought of having a pill to get you to sleep within a few minutes can be appealing if you are exhausted and simply unable to sleep. But there are many valid concerns about these drugs. For example, many of them cause tolerance, and thus physical dependence as you need higher and higher dosages for them to work. Also, you can't suddenly stop taking them without withdrawal symptoms (with the exception of Rozerem).

Side effects can be bizarre, ranging from forgetfulness and morning hangover to dry mouth and amnesia, and occasionally behaviors that are out of character for an individual, such as driving without remembering the trip or cooking dinner at 4:00 a.m.! There are a slew of drug–food interactions, so be careful if you take this medicine.

Alcohol: Just say no. The combination of alcohol with sleeping pills is incredibly dangerous and can cause a fatal reduction in heart and breathing rates.

Marijuana: You should not be taking anything that has a sedative effect because it can enhance the effect of the medication. With this combination, you might not wake up, if you know what I mean.

GABA supplements: These are sold at the health food store because they are an effective natural sleep aid. The combination of sleeping pills with GABA is not safe because of the enhanced levels of GABA the combination causes.

Sedating herbs: The combination of sedating herbs with sleeping pills is unsafe. They include catnip, ginseng, hops, kava, lemon balm, sage, St. John’s wort, skullcap, valerian root, yerba mansa, passionflower, and saffron. Kava is particularly worrisome.

Coffee, tea, and soda: Coffee, black tea, green tea, and matcha tea all contain caffeine. This substance undermines your sleep medication.

Statin Cholesterol Reducers

Examples: Atorvastatin (Lipitor, Avicor), fluvastatin (Lescol), lovastatin (Mevacor, Altacor, Altoprev), pravastatin (Pravachol, Lipostat, Selektine), pitavastatin (Livalo, Pitava), rosuvastatin (Crestor), simvastatin and ezetimibe (Vytorin), and simvastatin and niacin (Simcor).

These are among the most prescribed drugs in the world. They are said to lower your risk of heart disease by reducing the amount of cholesterol your body makes and are often prescribed along with diet and exercise regimens. These meds

decrease the amount of cholesterol your liver makes, and your liver makes about 75 percent of your total cholesterol. (The other 25 percent comes from food.) Statins block an enzyme called HMG-CoA reductase, which would otherwise allow the formation of cholesterol as well as of natural coenzyme Q10. (Read more about the drug mugging effect on CoQ10 starting on page [123](#).)

The cholesterol molecule is fatty, almost waxy, but your blood is water based. Think of oil and water—they won't mix well unless shaken. The cholesterol produced in the liver can't enter your bloodstream unless it is bound to a protein that acts sort of like a taxi. The protein-cholesterol compound, called lipoprotein, gets shuttled all around your bloodstream. There are good lipoproteins like HDL (high-density lipoprotein), which tote cholesterol back to the liver, where it's disposed of.

There is also a protein-cholesterol compound called LDL (low-density lipoprotein), which lugs cholesterol to your blood, where it clogs up arteries and impedes adequate blood flow to your heart and brain. Now you know why doctors are bent on bringing down your LDL. But are statins the answer? That is between you and your doctor. I've not been shy about my dismay over the indiscriminate prescribing of these drugs to people who don't genuinely need them. Here are some helpful drug–food interactions that you should know about if you are taking a statin.

Alcohol: Alcohol damages the liver all by itself, and when you combine it with a statin drug, you get a double whammy. That's because statins work in the liver, too, and they shift liver enzymes out of balance.

Grapefruit and its juice and pomegranate juice: Grapefruit spikes the blood levels of some statins, and this means more side effects. At the time of this writing, there are at least three statins that interact with grapefruit and may cause severe and irreversible liver damage and possibly a condition known as rhabdomyolysis. The three statins are atorvastatin, lovastatin, and simvastatin. Rhabdomyolysis, whose symptoms are dark, red, or cola-colored urine and muscle tenderness, stiffness, aching (myalgia), or weakness, could

come on slowly or all of a sudden. If you have these problems, it could be the beginning of rhabdomyolysis. For you science junkies, the interaction between grapefruit juice and statins occurs because the drugs block the action of an enzyme called cytochrome P450 3A4 (CYP3A4).

Other citrus juices (like tangerine and orange) may be a problem as well; this is not clear yet. Additionally, the latest research has found that pomegranate juice acts in a similar manner. This has not been completely settled, however. My advice is to avoid or limit these juices to no more than a sip each day because of their great antioxidant protection. But no guzzling of grapefruit or other citrus juices and pomegranate juice.

Of the three statins I mentioned, atorvastatin seems to be the least affected; however, I would not combine the juice with any of them, just to be safe. Other statins, including rosuvastatin, pravastatin, and fluvastatin, are good alternatives if you love grapefruit juice and take a statin. (See page 88 for more grapefruit interactions.)

Grapefruit seed extract: This is a dietary supplement that fights candida yeast infections and can be found at the health food store. It carries the same warnings as grapefruit, even though it's an herbal extract.

Oyster mushrooms: These are thought to have natural statin activity. Though weak in comparison with statin drugs, I think it's good to include them in your diet. There isn't enough activity to enhance your medication, so don't worry about that.

Thyroid Medicines

Examples: Armour Thyroid, levothyroxine, Levoxyl, Synthroid, Unithroid, and compounded thyroid formulas.

These medications are used for people who have low levels of circulating thyroid hormone, a condition called hypothyroidism. Some hallmark symptoms of low thyroid include fatigue, difficulty losing weight, and hair thinning or loss. These meds are also used in some autoimmune thyroid

disorders (Hashimoto's and Graves' diseases), depending on your thyroid hormone level. A good practitioner will measure your level of thyroid hormone and periodically adjust your medication dose until you are feeling better. These medications are somewhat stimulating. They increase heart rate and energy levels, and for that reason they should be taken in the morning rather than at night. Here is what you need to know.

Iron supplements: Taking iron along with thyroid medication will significantly interfere with the amount of thyroid your body absorbs. The problem is that many people take thyroid medication because they are deficient in iron (low ferritin), and so they need both of these items in their daily regimen. Just take the thyroid hormone in the morning, upon arising, on an empty stomach. Take the iron with lunch or with dinner, at least 4 hours after the thyroid medication.

Trace minerals: This dietary supplement is incredibly helpful if you have low thyroid, so many holistic doctors tell you to take a trace mineral each day. Like iron, separate this from your thyroid med by 4 hours. If you have to take both iron and trace minerals (along with thyroid medication, and this is quite common), then take the thyroid first thing in the morning and take both the iron and the trace mineral supplement at lunch (or dinner), at least 4 hours later.

Tofu and other soy products: These foods fight against you by crashing your thyroid hormone. You will need higher drug dosages to build it back up.

Broccoli, brussels sprouts, turnips, and cauliflower: These foods can also fight against you, lowering your circulating level of thyroid. Consume no more than 1 cup of these veggies three times a week, but if you love them, stay consistent and ask your doctor to raise your medication dose.

Dairy products and calcium supplements: Calcium can interfere with the absorption of thyroid medicine, which means that your thyroid-stimulating hormone (TSH) may rise and your thyroid hormone levels may be suppressed. Take your medication first thing in the morning, and take your calcium

supplement after dinner. Separate the medication from dairy foods by at least 2 hours.

Oatmeal, cereal, and other high-fiber foods and supplements: These speed metabolism and force medicine and vitamins to move through the colon much faster. This interaction will reduce your medication's effect. These foods are healthy, though, so I feel it's best to include them in your diet. Just eat your cereal 2 or 3 hours before or after your medicine.

Other foods: Take thyroid meds on an empty stomach because food in general interferes with it and reduces the amount your body gets.

Urinary Incontinence Medications

Examples: Cymbalta (duloxetine, also an antidepressant), Detrol and Detrol LA (tolterodine tartrate), Ditropan and Oxytrol (oxybutynin), and Tofranil (imipramine). Toviaz (fesoterodine) is new to the market and there are no data regarding this drug yet. I only include it here to make the drug list complete for people seeking medication choices.

The medications listed above are prescribed specifically for people with a weakened bladder or urinary sphincter, which causes stress or urge incontinence—the involuntary loss of urine. These people need to take numerous potty breaks during the day and night. Simply put, these medications can help people who can't hold onto their urine and who pee when they sneeze, walk, or get stressed out, or sometimes when there's no trigger at all. The condition arises for any number of reasons, including shifts in hormones, low estrogen, infection, spinal cord injury, pregnancy, childbirth, and prostate surgery. The medications tend to cause dry mouth, constipation, blurred vision, and drowsiness. Here's what else you need to know.

Grapefruit and its juice: These can spike the levels of medication, causing more side effects. (Read more about grapefruit on page [86](#).)

Garlic and melatonin: These may be inhibitors of CYP3A4. In English, this means that Detrol levels go up in the bloodstream, sparking more side effects.

Alcohol: Drinking may increase drowsiness and dizziness. Alcohol also makes people urinate more frequently, which undermines the effect of the medicine.

St. John's wort: This herb, which is so helpful for many people with depression, should not be used while taking Detrol.

Potassium supplements: Bladder meds slow down motility in the esophagus and intestinal tract, causing potassium to linger and increasing the likelihood of GI corrosion.

Diuretics: Prescription forms as well as natural herbal ones like green tea, matcha tea, yarrow, goldenseal, asparagus extract, dandelion, and stinging nettle will make you have to go to the bathroom more frequently. That interferes with your medicine, which is treating your over-active bladder.

Coffee, tea, and soda: Excessive amounts can cause urinary incontinence and aggravate bladder symptoms. Drink no more than 1 cup a day.

Horsetail tea: This herbal remedy helps people with bladder issues. Horsetail is the name given to the herb *Equisetum arvense*. I feel confident that this tea can be combined safely with the medications above. I've listed it here because it causes enhanced effects, which I consider beneficial in this case.



FOOD RULES: To Eat or Not to Eat

With all this talk of interactions with foods and herbs, it's important not to lose sight of the fact that many medications need to be taken with food while others should be taken on an empty stomach. The reasons for this sometimes have to do with the fact that a little fat in your meal improves absorption or in some cases inhibits absorption of a drug, affecting its bioavailability. If you absorb less of your medication, the therapeutic benefits are lowered. Sometimes, pharmacists advise that you take your medications with food simply because it will minimize stomach upset. There are many reasons for the food rules on your

medication label. I've outlined a list of food rules for medications. These are not hard-and-fast rules, just very basic guidance. If you have a particular concern about a specific medication, or if you do not see your medication (or medication category) listed, please ask your local pharmacist what is right for you. There are also thousands of medications that I have not listed here and that may be taken without regard to meals. Here's what you need to know.

TAKE THESE MEDICATIONS WITH FOOD:

Take these medications a few minutes before you eat, while you're eating, or shortly after you finish your meal.

ACE Inhibitors (Angiotensin-Converting Enzyme Inhibitors)

- Benazepril (Lotensin)
- Captopril (Capoten)
- Enalapril (Vasotec)
- Fosinopril (Monopril)
- Lisinopril (Prinivil, Zestril)
- Moexipril (Univasc)
- Perindopril (Aceon)
- Quinapril (Accupril)
- Ramipril (Altace)
- Trandolapril (Mavik)

Analgesics/Pain Relievers

Most pain relievers can be taken without regard to meals; however, they are very irritating to the stomach and often cause nausea or vomiting. I always recommend that you take the following with meals.

- Codeine and codeine-containing cough syrup
- Hydrocodone and acetaminophen (Lortab, Norco, Vicodin)
- Hydrocodone and Ibuprofen (Vicoprofen)
- Morphine (Avinza)
- Oxycodone (Roxicodone)
- Oxycodone and acetaminophen (Percocet)
- Oxycodone and aspirin (Percodan)
- Oxycodone extended-release (Oxycontin)
- Tramadol (Ultram, Ultram ER)

Antibiotics

Taking these on an empty stomach will improve absorption, but taking them with food will minimize stomach upset.

- Amoxicillin/clavulanate potassium (Augmentin)
- Azithromycin (Z-Pak)
- Doxycycline (Vibramycin, Vibra-Tabs)

Erythromycin and Erythromycin Ethylsuccinate (E.E.S.)
Metronidazole (Flagyl)

Minocycline (Minocin)

Nitrofurantoin (Macrobid)

Cephalosporin antibiotics:

Cefaclor (Ceclor)

Cefadroxil (Duricef)

Cefazolin (Ancef, Kefzol,)

Cefixime (Suprax)

Cefoxitin (Mefoxin)

Cefprozil (Cefzil)

Ceftazidime (Ceptaz, Fortaz, Tazicef, Tazidime)

Cefuroxime (Ceftin)

Cephalexin (Keflex)

Anticonvulsants

Gabapentin (Neurontin)

Phenobarbital (Solfoton)

Phenytoin (Dilantin)

Pregabalin (Lyrica)

Valproic acid (Depakene, Depakote)

Antidepressants

See page 34, Antidepressants and Mood Modifiers, and page 50, MAO Inhibitors, for a complete list. All categories of these medications (tricyclics, SSRIs, etc.) should be taken with food to reduce stomach upset, nausea, heartburn, and cramps. All of them can be very irritating, so take them with a snack or with a meal.

Antifungals

Griseofulvin (Fulvicin, Gris-PEG, Grifulvin V)

Itraconazole (Sporanox)

Antigout

Allopurinol (Zyloprim)

Anti-Inflammatories

See Arthritis Medicines on page 36 for a complete list.

Celecoxib (Celebrex)

Diclofenac (Voltaren)

Hydrocortisone (Cortef)

Hydroxychloroquine (Plaquenil)

Ibuprofen (Advil, Motrin)

Indomethacin (Indocin)

Ketoprofen (Orudis)
Nabumetone (Relafen)
Naproxen (Aleve, Anaprox, Naprosyn)
Sulfasalazine (Azulfidine)

Benzodiazepines

Alprazolam (Xanax)

Diabetes Medications

Take 5 to 60 minutes after eating, depending on drug. Check with your pharmacist for the correct waiting time for your drug. Please read *Diabetes without Drugs* for more information about safe usage.

Acarbose (Precose)
Abiglutide (Syncria injection, pending FDA approval)
Chlorpropamide (Diabinese)
Exenatide (Byetta)
Glimepiride (Amaryl)
Glipizide (Glucotrol, Glucotrol XL)
Glipizide and metformin (Metaglip)
Glyburide (Diabeta, Micronase)
Glyburide and metformin (Glucovance)
Liraglutide (Victoza)
Metformin (Fortamet, Glucophage, Glucophage XR)
Metformin and pioglitazone (Actoplus)
Metformin and repaglinide (PrandiMet)
Metformin and rosiglitazone (Avandamet) Metformin and sitagliptin (Janumet)
Micronized glyburide (Glynase)
Pramlintide (Symlin injection)
Repaglinide (Prandin)
Tolazamide (Tolinase)
Tolbutamide (Orinase)
Voglibose

Estrogen-Containing Drugs

Hormone replacement therapy
Oral contraceptives

Lipase Inhibitors

Orlistat (Alli, Xenical)

Salicylates

Salicylic acid or aspirin (Bayer, Ecotrin, St. Joseph)

Pain Relievers

These include ibuprofen, acetaminophen, and prescription opiates such as hydrocodone, oxycodone, and morphine.

Steroid Dose Pack

Methylprednisolone (Medrol Dose Pack) and prednisolone (Sterapred Dose Pack)

TAKE THESE MEDICATIONS ON AN EMPTY STOMACH:

Technically, taking drugs on an empty stomach is generally understood to mean 1 hour before you eat a meal or snack or 2 hours after you have finished eating.

Antibiotics

Rifampin (Rifadin)

Tetracycline (Sumycin)

Quinolone antibiotics:

Ciprofloxacin (Cipro)

Levofloxacin (Levaquin)

Ofloxacin (Floxin)

Antihistamines

Desloratadine (Clarinx)

Loratadine (Claritin)

Antiarrhythmics

Digoxin (Lanoxin)

Appetite Suppressants

Phentermine (Adipex-P)

Beta-Blockers

For a complete list, see page [38](#).

Atenolol (Tenormin)

Labetalol (Normodyne, Trandate)

Metoprolol (Lopressor and Toprol XL)

Propranolol (Inderal)

Bone-Building Drugs

Actonel (Risedronate)

Boniva (Ibandronate)

Didronel (Etidronate)

Fosamax (Alendronate)

Fosavance (Alendronic acid and colecalciferol)

H2 Acid Blockers

Can be taken 15 minutes to 1 hour before eating.

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid, Pepcid Complete)

Omeprazole (Prilosec)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Sleeping Medications

These may be taken without regard to meals, but will work faster on an empty stomach. For a complete list, see page [61](#).

Eszopiclone (Lunesta)

Zaleplon (Sonata)

Zolpidem (Ambien)

Thyroid Hormones

Armour Thyroid

Levothyroxine or L-thyroxine (Levothroid, Synthroid, Unithroid)

Liothyronine (Cytomel)

T₃/T₄ compounded hormone

3

Lifestyle Drug Muggers

The title of my book may mislead people into thinking that the only way they are going to suffer the effects of nutrient depletion is as a result of a pharmaceutical chemical. Not so. In fact, the impact of nutrient depletion is felt by people who don't even use medications. That's because we can lose our nutrients by making certain lifestyle choices, such as drinking soda or coffee or going on yo-yo diets. We all find ourselves stressing over life's situations, don't we? This, too, can slowly steal the life out of you because stress is a mugger of healthy nutrients and hormones. Malabsorption issues related to poor digestion can also cause you to lose important nutrients. You might be surprised by this information, but as you will soon see, a wide assortment of lifestyle drug muggers might be mugging you of important nutrients. To get a glimpse of just how important it is to pay attention to nutrients that might need replenishing, just answer the following questions.

Do You Love Coffee or Tea?

These popular beverages contain a lot of tannins, substances that can grab important minerals from your body. So if you like to drink coffee or tea every day, you may be low on calcium, magnesium, zinc, phosphorus, iron, and other minerals. Also, caffeine has a diuretic effect on the body. I didn't really believe this when I first heard it. I went so far as to have a test done on myself because I love tea and coffee. Sure enough, it showed that I was slightly short on zinc and iron. You can read the chapters on zinc and iron (pages [288](#) and [154](#)) if you want to learn more about these important minerals and see what symptoms may be caused by these deficiencies. Don't worry, though. You don't have to give up these beverages entirely. You can buy a supplement called trace minerals to keep your minerals replenished. Green drinks and spirulina supplements are other ways to give your body

healthy minerals in an easy-to-digest form. Herbal tea does not contain tannins and therefore won't mug your minerals.

Caffeine in black or green tea (and in sensitive folks even matcha tea), coffee, and energy drinks can be so stimulating that you may find yourself needing tranquilizers or sleeping pills at night. A better bet would be to forgo caffeinated beverages after 3:00 p.m. and drink herbal tea. You'll sleep better, plus you'll be saving your precious minerals.

Are You a Soda Pop Junkie?

To put it simply, soda pop is not good for you. It doesn't give your body any form of nutrition, despite all the glamorous advertisements for it. Many health experts feel that cola is a powerful drug mugger of bone-building nutrients because of its high content of phosphoric acid, which is so acidic that your body pulls calcium from your bones to buffer all the acid. It's a little more complicated than that, but you get the gist. It's also laden with high fructose corn syrup and sugar, contributing to the development of diabetes and obesity. In the 2006 Framingham Osteoporosis Study published in the *American Journal of Clinical Nutrition*, researchers concluded that "Intake of cola, but not of other carbonated soft drinks, is associated with low BMD [bone mineral density] in women." Then, in a surprising animal study conducted in 2009, scientists also found that soda increased both estrogen and testosterone levels by an unknown mechanism. Excessive amounts of these hormones can be dangerous, and tilt other hormones and nutrients out of balance.

Artificially sweetened soda (diet soda) is not any better. The manufacturers are up-front about it and do let you know what you're getting. But not one of those artificial sweeteners—I don't care what kind they are, they're all basically the same—will help you lose weight. There's also evidence to suggest that they lodge in the nervous system and even kill off brain cells by virtue of the fact that they are *excitotoxins*, meaning that they excite or shake up the body's cells until they die. In another study done in 2009 and published in the *Clinical*

Journal of Pain, researchers found that artificial sweeteners apparently spark migraines in some people.

In my opinion, your best bet is to stay away from artificial sweeteners completely, not just in soda. The only exception might be if you go on a weight loss program for a few weeks and your program requires this. But again, this is a short-term process for a few weeks. That's much different than consuming these foods and beverages all day long, every day for years. I wouldn't do that! I prefer that you consume natural sugars instead, just less of them. Try honey, raw agave syrup, blackstrap molasses, coconut nectar, turbinado sugar, or brown rice syrup. For more about safe, healthy sweeteners, see Chapter 15 in my *Diabetes without Drugs* (Rodale 2010).

Back to the fizzy stuff now. For a healthy soda substitute, try this inexpensive homemade recipe of mine. Mix some grape juice with seltzer water, about a 50/50 mix. It will taste just like soda but doesn't have all the junk! Instead of grape juice, you can also buy pomegranate juice or flavored stevia—I like the root beer—and mix a few drops of that with the seltzer water. Here's one last option: Try Zevia Natural Cola. I found out about this company at a health expo. They make all-natural, sugarfree sodas in delicious flavors. They are sweetened with stevia and other natural ingredients, so they're safe for people with diabetes and better for hard-core soda addicts. They are sold in many health food stores. Big cola makers can't help but get in on the action, too. In 2008, Pepsi launched Pepsi Raw in the United Kingdom and, later, the same drink as Pepsi Natural in the United States. It contains natural ingredients such as cane sugar, coffee leaf, natural caramel coloring, apple extract, grape tartaric acid, natural gum arabic, and sparkling water. To give you an idea of the contrast, the ingredients of regular Pepsi include high fructose corn syrup, sugar, artificial colorings, phosphoric acid, and caffeine.

Do You Need to Take Laxatives?

People who are constipated often take laxatives to promote regularity. If you are using this type of medicine (prescribed or

over-the-counter) more than twice a week, you are going to suffer a drug mugging of every nutrient you need for good health. The reason is that laxatives speed the passage of food through the colon. When that happens, your body doesn't have an opportunity to extract all the healthy nutrients from your food. Laxatives have the greatest impact on minerals and fat-soluble vitamins like vitamins D and A.

If you use laxatives regularly, take a good multivitamin, a trace mineral formula, and vitamin D and/or beta-carotene (for vitamin A). And if constipation is such an issue for you, consider also taking probiotics—supplements that contain beneficial bacteria—and a small amount of aloe vera juice each day. You'll also find a low-sugar diet to be helpful, along with taking enzymes with every meal. Regular oatmeal (not the quick-cooking type) as well as prunes would be good, too. You may not find prunes easily nowadays. The name was legally changed to dried plums. Same thing.

Is Red Wine the Sixth Food Group in Your House?

I know how much people like to drink. In fact, one of my good friends has a wine cellar bigger than my house! You already know that drinking in excess is bad for you. That's because it creates a potent neurotoxin called acetaldehyde that damages the brain, liver, and pancreas. I'll spare you the long lecture because I like chocolate martinis, too. Regular use of alcohol will mug your body of all your B vitamins (particularly thiamine), as well as your glutathione, minerals, vitamin C, beneficial bacteria, and other important nutrients you need to stay healthy. Losing a few nutrients may not sound like a big deal, but over time the drug mugging effect of alcohol can shut down the liver and pancreas. Of course, this extreme scenario usually applies to chronic alcohol abusers, but it can also apply to people with chronic gastrointestinal tract problems. The powerful drug mugging effect occurs even in people who drink one glass of wine with dinner each night. If you drink alcohol on a regular basis, protect yourself with high-quality supplements such as B complex, extra thiamine, probiotics,

trace minerals, extra selenium, and vitamins C and E. It's easy. You'll be glad you did.

Are You Stressed?

Welcome to planet Earth. Who isn't stressed? I think stress is why a relaxing glass of wine may be some people's sixth food group.

Doctors have long known that stress of any sort can tax your immune system and wear you down physically and emotionally. Stress, especially when prolonged, hurts your adrenal glands and your thyroid gland, which causes major imbalances of important hormones in your body. The drug mugging effect of stress is widespread even though it comes on slowly.

You may want to supplement with B vitamins because they are antistress nutrients. In particular, pantethine nourishes the adrenal gland. Antioxidants are also important for you because stress translates in the body to free radical damage of cells, which can cause infection, cancer, diabetes, and heart disease. Free radicals are naturally occurring molecules that damage cells. A powerful antioxidant called astaxanthin is a great addition to anyone's health regimen. Minerals such as calcium and magnesium are also critical.

And why not drink a superfoods green supplement each day or take chlorophyll or spirulina tablets (if you don't like the taste of green drinks)? These contain chlorophyll, which helps detoxify an acidic and stressed-out body. You might try a supplement that contains greens from the ocean, such as spirulina, chlorophyll, and phytoplankton, or barley grass or any number of green supplements sold at health food stores. There is a long chapter (Step 1) in my diabetes book *Diabetes without Drugs* that will inform you about the tremendous health benefits of green supplements. Each of these products contains fantastic ingredients that can help you improve your health and increase your vitality and energy reserves regardless of your condition. That's why they call them superfoods.

Do You Like to Smoke? And I Don't Just Mean Cigarettes ...

Smokers of cigarettes and marijuana have a tendency to run out of vitamin C, an anticancer compound found in citrus fruits. In fact, each cigarette costs you about 30 mg of vitamin C. You need vitamin C to keep your arteries elastic so that blood flows properly to your heart and everywhere else. Since vitamin C isn't stored in the body, the drug mugging effect of smoking is serious. That's one reason smokers and those exposed to secondhand smoke have much higher risks for cancer.

Cigarette smoking imparts the heavy metal cadmium to your body, and cadmium is a potent neurotoxin. If it is present in your body, it throws off your trace minerals, so you might say it's a drug mugger of healthy minerals (which you need to make bones). Smoking steals thiamine as well, and low thiamine can cause cardiovascular, neurological, and neuromuscular problems and can lead to a condition called beriberi.

If that isn't bad enough, smoking also goes hand in hand with lung cancer. There are hundreds of studies that point to a connection between smoking and lung cancer. It's a no-brainer. Vitamin A can help. One study by the American Cancer Society found that heavy smokers with low vitamin A levels had three times as many cases of cancer as heavy smokers with normal vitamin A levels. So low vitamin A translates into higher cancer, and so does smoking itself! If you smoke and want to add beta-carotene (vitamin A) to your regimen, please refer to Chapter 5, page 101, to make sure you get the natural, healthy sort. Vitamin A protects the lungs and can repair some of the damage done to those delicate tissues. A little added protection with a good antioxidant, vitamin C, N-acetyl-L-cysteine (NAC), and thiamine supplements would be helpful to people who smoke or have a history of smoking.

Do You Sit In an Office All Day?

If you're like me, going out into the sun happens rarely. I don't golf, sunbathe, or play tennis. I just sit here, write cool books, and answer health questions from around the world. If you have a job that keeps you indoors, you may run out of vitamin D. Sunlight stimulates your skin to form vitamin D, but it's blocked by smog, fog, curtains, sunscreen, even window glass.

You need vitamin D for strong bones, to prevent cancer, and to prevent diabetes. (See Chapter 23, page 277, for more information on vitamin D.) I'm not going to recommend supplementation right off, unless you are over the age of 40 or chronically ill. I'm going to tell you to get out of your office and go for a walk outside. We'll do this together, right now. Just go out for 15 minutes. My book will wait. Spending 15 minutes outdoors in the sunlight each day can make a tremendous difference in your health. In a perfect world, the sunlight you get is on your belly and back, not your arms or face. Improving serum levels of vitamin D reduces the incidences of multiple sclerosis, breast cancer, prostate cancer, leukemia, and autoimmune disorders. Read Chapter 23, Vitamin D, to learn more about the benefits of this amazing nutrient.

Do You Feel Like You're Losing Your Mind?

If you are starting to forget little things, are feeling depressed, and are getting confused, your family and doctor may recommend that you start taking a powerful mind-altering drug. Before you do, read on: When I worked in nursing homes and assisted-living facilities years ago, many residents were prescribed psychiatric drugs. When I ordered their vitamin B₁₂ levels be tested, many were shown to be deficient.

Why is this important? Vitamin B₁₂ plays a tremendous role in how well your brain functions. And many people have a hard time getting enough of this important nutrient as they age. If you have been diagnosed with senile dementia or Alzheimer's disease or even if you're simply having issues with your memory, get your B₁₂ levels checked. (For more

information, see page 185.) Because B₁₂ is found in meats, strict vegans of any age can also run low unless they supplement.

If you have a B₁₂ deficiency, you could also develop little sensations of pins and needles in your hands or feet. You might have sores in or around your mouth. When you run out of B₁₂, your other B vitamins may run low, too, and this can be dangerous. For example, you may be short on riboflavin, pyridoxine, or thiamine. This can happen to seniors and to people with *Candida albicans* infection or malabsorption disorders like celiac disease, Crohn's disease, or irritable bowel syndrome. It can happen to folks who have had gastric bypass surgery, too.

I believe that vitamin B₁₂ deficiency is so widespread among the elderly that they are often sent to nursing homes when supplementation of B₁₂ (in concert with B complex) could have done the trick. That and a fish oil supplement each day (particularly DHA) go a long way toward correcting the problems described here. I know this because many letters from people who read my "Dear Pharmacist" column thank me for this simple solution. I have other simple solutions posted at my Web site, www.DearPharmacist.com, where I have archived my columns for you to learn about your health.

So if you think you're losing your mind, you might be, but it could be easier to fix than you think.

Do You Take Fat Blockers or Follow Fad Diets?

The most popular fat blocker is called Alli and is sold over the counter. It can latch on to fat in your food that would otherwise land on your thighs. Its prescription counterpart, Xenical, comes in a higher dose. If these drugs can grab hold of fat in your foods, what do you think they are doing to the fat-soluble vitamins in your foods? Yes, they are drug mugging those essential nutrients, too. So if you take Alli or Xenical, you may run short on vitamins A, E, K, and D.

This is a huge problem, because if you don't have enough of these nutrients, your risk for heart attack, blood clotting problems, blindness, and cancer go up. I'm not saying that these drugs cause these conditions, because they don't. I'm just saying that they do a number on your stash of nutrients that protect against these problems. You may be at high risk for any of these conditions and not be aware of it, so why not take the right nutrients to replenish your stash and protect yourself?

Now a word about fad diets. Low-fat diets do the same thing as fat blockers. Low-carb diets, such as the Atkins diet, aren't much better. Diets like this rob you blind of vitamin C, beta-carotene, folic acid, B₆, and many minerals. In practical terms, another way to say "low carb" is to say "high fat." It's not smart to eat a high-fat diet. Why would you want to be on a diet that clogs your arteries? Why would you even think of following a diet in which bacon and salami are considered better for you than a sweet potato or apples?

If you want to see some nasty pictures of salami and hot dogs up close, get on the computer and visit Health Ranger Mike Adams's Web site, www.NaturalNews.com. He's posted highly magnified pictures of what is in these foods, which you will promptly give up.

What about the pizza diet? Are you kidding me? C'mon, this is silliness. I confess that there were very few home-cooked meals at my house while I was locking myself in the office to write this book. My husband, Sam, threatened to buy one of those diet plans featured on TV infomercials so he could get regular meals. I heard him hollering from the living room couch: "Hey, Suzy, did you hear that? We can get some food delivered here every day! Every single day! And I'm *really* hungry!" Wise guy!

So what could possibly be wrong with that? A lot of diet plans on TV sell you the same processed foods that you can get at the grocery store, except in smaller portions. But the boxed foods from diet plans aren't very healthy. They're not grown organically, they're highly processed, and they have way too many funky ingredients in them. I don't believe that

they are as good as real food that you can grow in your garden or buy at organic farms or grocery stores, and cook yourself. When you cook your own meals, you know exactly what's on your plate. Natural is always better. It comes from the earth and goes directly to your plate. That has to be better for you than boxed food that gets mailed to you. That said, please know that not all weight clinics make you eat boxed foods. One of the best weight loss centers I've come across is Metabolic Research Center, because you can eat real food and they help you lose weight by balancing your hormones. I'll save the rest of the story on weight loss for my next book.

Do You Have Food Allergies?

People who are allergic to whole groups of food have to be vigilant about avoiding them and finding substitutes for the nutrients they must sacrifice. If you are allergic to the casein or lactose found in dairy products, for example, then you lose a popular source of calcium. The good news is that greens, such as kale, Swiss chard, and broccoli, are all superior sources of calcium anyway. These natural sources are better ways to get calcium than cow's milk or fortified soy milk because the calcium is easier to absorb and digest.

In my opinion, soy is potentially problematic because it behaves much like the female hormone estrogen in the body. Even calcium-fortified soy milk is not your best source of calcium. Get this mineral like the cows do—from eating plants! (There is more on milk and its potential problems at the end of this chapter, as well as in the calcium chapter, which starts on page [113](#)).

If you are allergic to gluten, on the other hand, you lose a source of folic acid since breads and pastas are often enriched with this B vitamin. It's no biggie, if you make sure to eat other sources of B vitamins such as quinoa. This grain is safe for gluten-sensitive people, including those with celiac disease, and it's loaded with vitamin E, calcium, iron, and B vitamins.

If you're allergic to corn, you lose a good source of fiber, thiamine, folate, and pantethine (the active form of vitamin

B₅). Just be sure to eat lots of other veggies to make up for it.

Are You a Drive-Thru Junkie?

If your favorite food comes wrapped in waxed paper or in Styrofoam, we need to talk. They call it fast food for a reason: A regular diet of this kind of food is the fastest way to clog your arteries and develop heart disease. Generally speaking, these foods are laden with artificial colors, preservatives, MSG, high fructose corn syrup, refined white sugar, trans fats, and chemicals that I can't pronounce or find in my medical resource references. Even the healthier choices on the menu often contain chemicals and preservatives that some people are sensitive to such as sulfites and nitrites.

Watch the documentary *Super Size Me* for a fascinating look at one man's experience with fast food. He ate every meal at McDonald's for 30 days straight. After only 2 weeks, his doctor warned him about his increasing risk for dangerous cardiovascular complications. After 30 days, he'd gained 18 pounds, lost his sex drive, and developed mood swings, not to mention mild liver damage.

The drug mugging effect of eating nothing but fast food is huge. I can't even point to just a nutrient or two. You'd have to take hundreds of dollars' worth of supplements each month to offset a daily intake of a cheeseburger, fries, and a shake. Consuming these foods once in a blue moon is fine, but I know people who eat this way or feed their kids this way every day, sometimes twice a day!

I know, it's yummy. Hey, I was young and reckless once upon a time, too. But eating fast food puts you on the fast track to developing type 2 diabetes, heart disease, high blood pressure, brain fog, obesity, arthritis, fatigue, fibroids, osteoporosis, pancreatitis, breast cancer, colon cancer, prostate cancer, and on and on. But don't worry, pharmacies are happy to sell you lots of medications in an attempt to treat these conditions. Why am I telling you this? Because they don't call me America's Most Trusted Pharmacist for nothing. I promise you, it will be far less painful and produce fewer side effects to

clean up your diet. Changing to a healthy diet is so much safer (and cheaper) than all those drugs (each with drug mugging effects) that you'll wind up taking if you don't change it.

I realize you can't suddenly stop eating fried chicken (or can you?), but certainly it's possible to ease into a new diet. Just introduce something new and living each week. Try asparagus this week. Sauté it in olive oil with a little goat cheese and sea salt. Next week, try beets. Peel and shred a little bit into your salad. Make your own fresh guacamole. Try cilantro. It's a great heavy metal chelator, which means that it yanks toxic mercury out of your body. Put a little in your salad or sprinkle it into soup at the very end of cooking.

Learn to shop around the perimeter of your supermarket. Buy nutritious foods and salads, which naturally help you feel better and offset the drug mugging effect of medicines. I'll be very blunt here: If you regularly eat fast food and processed boxed or canned meals, your gut is in such bad shape that you won't be able to absorb or incorporate any benefits from the vitamins you take anyway! (Read about probiotics in Chapter 17, page 221, to learn about the importance of healthy bacteria.) Eat more plant foods and fewer foods that are boxed, canned, and processed.

Look at the word D-I-E-T. If you scramble the letters, you get the word E-D-I-T. That's what I want you to do—edit what you eat. Apples instead of apple pie. Brown rice instead of white rice. A baked potato instead of french fries. See, it's not that hard! For more on how to edit what you eat and lose weight, refer to *Diabetes without Drugs*.

Do You Drink More Milk Than Water?

I'm firmly convinced that humans should get their calcium from greens rather than from milk, unless it's raw milk that is not pasteurized so it still has nutrients in it. When I say greens, I mean turnip or mustard greens, Swiss chard, kale, broccoli, cabbage, spinach, and so on.

You'll never catch me wearing one of those milk mustaches you see in popular advertisements. The ads have convinced

mothers to feed their babies lots and lots of milk. Maybe this type of advertising programs the minds of Americans to think that milk is a healthy beverage. It's healthy for calves who need it to gain hundreds of pounds within a few months, but I don't think that large amounts of it are healthy for humans. Scientifically speaking, casein, the protein found in milk, causes allergies in many people. Let me make it clear: I'm not suggesting milk is bad. I just think there is a high incidence of allergies to some of its components. You can take an antibody blood test to find out if you're allergic to casein. You have to take the test very early in the morning in order for it to be accurate.

I constantly see people in the pharmacy who are wheezing, sniffing, or dealing with asthma or bronchitis all the time. I see them in Florida getting bagfuls of nebulizing solution, inhalers, breathing pills, and nasal inhalers. I can't help but wonder if some of these people are allergic to milk and other dairy products.

Recently, I suggested a dairy-free diet to two mothers who had toddlers living on multiple breathing medications. Following a dairy-free diet means consuming no milk, butter, cheese, ice cream, yogurt, pudding, milkshakes, or any other food containing dairy products. I suggested they do this for 30 days solid, no cheating. I have to tell you, it's hard to get mothers to agree to this when they think milk is good for you and it's even recommended by their pediatricians as the best source of calcium. But it took me only a few minutes to convince them to try my plan. I guess these two moms were open-minded and motivated to try something new since the medications weren't helping much.

Within a month, both mothers came back to happily report that their children needed fewer treatments and less emergency breathing medication. One of the youngsters was able to stop using his albuterol inhaler altogether as a result of going dairy-free.

If you already avoid milk but miss yogurt, I have a surprise for you. There is a yogurt made with coconuts—coconut milk

to be exact, which is very healthy. This brand is so good you'll want some every day, just like I do.

The company that makes it is called Turtle Mountain, and they call the brand So Delicious. Their yogurt contains six live and active cultures of probiotics along with natural sweeteners. Their soy-free, dairy-free line also includes frozen desserts. You can learn more by visiting sodeliciousdairyfree.com. I don't get anything for saying that except a craving for it.

Do You Love Grapefruit?

Foods can act like drugs. The interaction of grapefruit with numerous medications can cause the medication level to spike. That's why you see medication labels warning you not to eat grapefruit.

It's a shame, too, because this incredible fruit can help you lower cholesterol, burn fat, and reduce cancer risk. But it does prevent proper breakdown of some medications, causing the blood level to spike. It's because of the seeds, which are the primary source of naringenin, the bitter chemical that causes the pucker. If you take supplements of grapefruit or naringenin you should be aware that interactions may occur. You'll see it listed in various ways, such as naringenin, grapefruit seed extract, or GSE, and sometimes it's part of a comprehensive bioflavonoid formula that also contains hesperidin, rutin, or quercetin. These types of products are widely available at health food stores and are used to eliminate candida (yeast) overgrowth since they have strong antifungal properties. I've recommended them frequently, but it's important for you to know that there could be consequences when you combine this delicious fruit or supplements derived from it with a handful of medications.

Some research suggests that pomegranate juice can do the same thing but to a lesser extent. The same may be true for tangerines and some oranges. Grapefruit is definitely the most important of this fruity bunch, however.

One more thing: It doesn't matter what time of day you eat grapefruit or drink grapefruit juice, or if it's been separated

from your medication by a few hours. It's still going to have the same effect because it's not as simple as an interaction between the fruit and your drug. Grapefruit actually temporarily changes the way your liver behaves, so your liver and its detoxification pathways are affected all day long.

When you drink grapefruit juice (and possibly pomegranate juice), your body stops breaking down your medicine and the drug level starts to build up in some cases. The most commonly used medications that interact with grapefruit and other juices are sildenafil (Viagra), buspirone (BuSpar), sertraline (Zoloft), triazolam (Halcion), diazepam (Valium), carbamazepine (Tegretol), cyclosporine, tacrolimus, felodipine, nifedipine (Procardia), HIV medications, certain statin cholesterol drugs (simvastatin, atorvastatin, lovastatin), amiodarone, methadone, digoxin (Lanoxin), and losartan (Cozaar).

Please refer to the chart on page 88. If you take medications, just to be safe, no guzzling any of these beverages, okay?

GRAPEFRUIT INTERACTION CHART

I've prepared the following list in case you are wondering whether a medication is safe to combine with grapefruit. Scientific research yields new findings constantly and only one medication in a particular category may be represented (because I found a study for it), but there are numerous drugs in each category and your medication just may not be listed as of yet.

DRUG CLASS	MEDICATION	GRAPEFRUIT INTERACTION RESULTS
Antiarrhythmics	Amiodarone (Cordarone)	Heart rhythm problems
Antibiotics and antifungals	Ciprofloxacin (Cipro)	Elevated drug level in the bloodstream may enhance dangerous side effects associated with these drugs
	Levofloxacin (Levaquin)	
	Doxycycline (Doryx or Vibra-Tabs)	
	Itraconazole (Sporanox)	
	Ketoconazole (Nizoral)	
Anticoagulants	Warfarin (Coumadin)	Elevated drug level, which may lead to excessive blood thinning. This may or may not be seen, as it may be internal. Nosebleeds sometimes

		do occur as a first hint, as does easy bruising
Anticonvulsants	Carbamazepine (Tegretol)	Sedation, slow breathing
Antidepressants	Sertraline (Zoloft)	Elevated drug level, so it increases side effects such as anxiety, dizziness, nausea/vomiting, diarrhea
Anxiety	Amitriptyline (Elavil)	
	Buspirone (BuSpar)	Sedation, impaired thinking
	Clozapine (Clozaril)	
	Diazepam (Valium)	Breathing problems
	Haloperidol (Haldol)	
	Midazolam (Versed)	Slow pulse
	Trazodone (Desyrel)	
Blood pressure medication, including calcium channel blockers	Amlodipine (Norvasc)	Rapid pulse, low blood pressure, fainting
	Diltiazem (Cartia)	This interaction is slight.
	Felodipine (Plendil)	Rapid pulse, low blood pressure, fainting
	Losartan (Cozaar)	Elevated drug level, low blood pressure, dizziness, fainting, rapid pulse
	Nifedipine (Procardia)	Rapid pulse, low blood pressure, fainting
	Verapamil (Calan, Isoptin)	This interaction is slight.
Breathing medicine	Theophylline (Theo-Dur, Theo-24)	Might decrease effectiveness
Cardiac glycoside	Digoxin (Lanoxin)	Either reduces absorption or increases it, depending on the individual and hydration status
Erectile dysfunction drugs	Sildenafil (Viagra) and other sex pills	Headache, flushing, gastrointestinal problems
Estrogen drugs	Birth control and hormone replacement therapy	May produce more estrogen side effects such as dizziness, breast pain, irritability, insomnia, nausea/vomiting, joint pain

Immunosuppressants	Cyclosporine (Sandimmune, Neoral)	Liver and kidney damage
	Tacrolimus (Prograf)	Increases dangerous side effects
Insomnia medication	Triazolam (Halcion)	Excessive sedation, slowed breathing and pulse
Pain medication	Methadone	Increases drug levels, causing excess sedation, slowed breathing, impaired thinking, and bradycardia
Statin cholesterol reducers	Atorvastatin (Lipitor, Advicor)	Muscle aches, headache, rhabdomyolysis, liver or kidney damage, leg cramps, and neuropathy
	Fluvastatin (Lescol)	
	Lovastatin (Mevacor)	
	Pravastatin (Pravachol)	
	Rosuvastatin (Crestor)	
	Simvastatin (Zocor, Vytorin, Lipex, Simcor)	

Also, there are a few medications that have been listed for your safety, even though the data is inconclusive or conflicting. Other medications such as the Alzheimer's drug donepezil (Aricept), the breast cancer agent tamoxifen (Nolvadex) and possibly related breast cancer drugs, the prostate medication tamsulosin (Flomax), and the popular nonsedative types of antihistamines like loratadine (Claritin) and fexofenadine (Allegra) seem to also interact with grapefruit juice. However, the significance of these interactions is still unknown.

4

The Punch List of Drug Muggers

The following pages are designed to make it quick and easy for you to install a nutrient security system. The chart features the most popular categories of medications, providing information about which nutrients are lost when you take a particular medication. Then you will see what could happen to you if you don't replenish what the drug mugger stole. Most drugs deplete the body of many nutrients. I'm not advising that you automatically take every single nutrient on the list. Please ask your doctor which ones are right for you based on your symptoms and medical history.

I want you to be sensible about taking supplements. Micronutrients have broad and powerful effects on the body, so when replenishing these lost compounds, you could experience side effects, especially if you are taking poor-quality products. A sensible approach to integrating new supplements is to begin taking only one supplement at a time and, as far as dosages go, start low and go slow. See how your body reacts to it. Then, if everything goes well, after a week or two bring in the next nutrient.

It takes only a few weeks or months to replenish depleted nutrients. However, if you must continue to take drug muggers, you may find that you need perpetual replenishments (at low doses). One more thing: I find that it's best to take vitamins and minerals with meals and not with medications and high-fiber foods or fiber supplements. For example, if you are taking thyroid medication and need iron supplementation, separate the two by 4 to 6 hours. If you are taking an antiseizure medication and therefore also need to take a folic acid supplement, again, separate these by hours. Don't pop all the pills at once.



Drug Muggers: How They Rob You

At least half of the drugs approved in the United States commonly deplete specific nutrients, creating the need for nutritional supplementation. More drugs probably deplete nutrients; we just don't have the data to prove it yet. The mechanisms by which drugs mug you can vary. Most people assume it's because the drug grabs hold of a nutrient in the gut and takes it out of the system through the gastrointestinal tract (called chelation). Certainly, a drug can mug you this way, but there are other ways, too.

- Altering the acidity in your gastrointestinal or urinary tract
- Stimulating or inhibiting enzymes involved in the transport of nutrients around your body
- Stimulating or inhibiting enzymes involved in activating nutrients or in transforming them into more usable substances

Also, certain drugs require specific nutrients in order to work; they might need to bind to a protein, for example, or perhaps they require a specific nutrient in order to be detoxified in your liver. So just by virtue of taking a certain drug, you may need more of a particular nutrient.

Let me put all this in perspective. You need concrete, nails, and wood to create a building. For the human body, you need the right building materials, too, such as carbohydrates, protein, and healthy fats. But this foundation will do you no good if you don't have the proper vitamins and minerals in it, because then your body can't synthesize new tissue or provide the cellular energy you need to move, breathe, and talk. Drugs can alter your body's ability to absorb, digest, transport, break down, or eliminate toxic compounds that you encounter every day, just by their ability to steal vital nutrients from you. The cascading effect affects your quality of life and may remain undiscovered for years as you get on a medication merry-go-round. Thankfully, the coming pages will shed some light on what may be happening to you.

COMMON DRUG MUGGERS

TYPES	COMMON DRUGS	INSTALL YOUR SECURITY SYSTEM
Acid blockers	Proton pump inhibitors, H ₂ blockers	All nutrients, because these drugs alter the pH of the gut
Antibiotics	All	B vitamins, calcium, magnesium, iron, beneficial bacteria
Antidepressants	MAO inhibitors: selegiline (Eldepryl), phenelzine (Nardil), isocarboxazid (Marplan)	Vitamin B ₆
	SSRIs: Paxil, Prozac	Iodine

	Tricyclics: amitriptyline (Elavil), desipramine (Norpramin), doxepin (Sinequan), clomipramine (Anafranil), imipramine (Tofranil), nortriptyline	CoQ10, riboflavin
Anxiety medications	Alprazolam (Xanax), clonazepam (Klonopin), diazepam (Valium), lorazepam (Ativan)	Melatonin
Blood pressure medications	ACE inhibitors: captopril (Capoten), enalapril (Vasotec), lisinopril (Zestril, Prinivil), quinapril (Accupril), ramipril (Altace), trandopril (Mavik), fosinopril (Monopril)	Zinc, magnesium, potassium, calcium
	Beta-blockers: atenolol (Tenormin), metoprolol (Toprol, Lopressor), timolol (Timoptic drops), nadolol (Corgard), sotalol (Betapace)	CoQ10, melatonin
	Calcium channel blockers: nifedipine (Procardia), felodipine (Plendil), verapamil (Calan, Isoptin), diltiazem (Cardizem), amlodipine (Norvasc)	Potassium, vitamin D, calcium, possibly CoQ10
	Clonidine (Catapres), methyl dopa (Aldomet)	CoQ10
Breathing medications	Fluticasone (Flonase and Flovent)	Folic acid, most minerals, iodine
Cholesterol medications	Fibrates: fenofibrate (Tricor), ezetimibe (Zetia), gemfibrozil (Lopid), clofibrate (Atromid-S), colestipol (Colestid), cholestyramine (Questran)	Most minerals and B vitamins
	Statins: atorvastatin (Lipitor), lovastatin (Mevacor), pravastatin (Pravachol)	CoQ10, possibly vitamin D
Diabetes medications	Glyburide (Diabeta, Glynase, Micronase)	CoQ10, B ₁₂ , folic acid
	Metformin (Glucophage, Glucophage XR, Glumetza, Fortamet, Riomet), metformin and sitagliptin (Janumet), tolazamide (Tolinase), glipizide (Glucotrol)	CoQ10, B ₆ , B ₁₂ , folic acid
Diuretics	Virtually all of them	B vitamins, vitamin C, zinc, calcium, magnesium, potassium
Gout medications	Colchicine	Vitamin A, B ₁₂ , potassium, calcium
Laxatives	Bisacodyl (Dulcolax)	Potassium, other minerals
	Mineral oil	Vitamin A,

		calcium, vitamins D and E, most other nutrients
NSAIDs	Ibuprofen (Motrin, Advil), naproxen (Aleve, Naprosyn, Anaprox), ketoprofen (Orudis), meloxicam (Mobic)	Vitamin C, folic acid, iron
Oral contraceptives, hormone replacement therapy	All estrogen-containing hormone drugs used for contraception and menopause	Beneficial flora, magnesium, zinc, most minerals, B vitamins, vitamin C
Salicylates	Aspirin, Percodan, Fiorinal	Vitamin C, calcium, iron, folic acid, pantethine, protein
Thyroid medications	Levothyroxine, Synthroid, Armour	Iron, calcium

TYPES	OR THESE COMPLICATIONS MAY RESULT
Acid blockers	Heart disease, high homocysteine, fatigue, candida, irritable bowel syndrome, increased risk of cancer, poor vision, high blood pressure, anemia, brittle nails, tiredness, hair loss, hearing loss, tooth decay, higher risk of developing gluten sensitivity
Antibiotics	Heart disease, high homocysteine, fatigue, candida, increased risk of cancer, irritable bowel syndrome, leg cramps, high blood pressure, fatigue, low thyroid, bone loss, weight gain
Antidepressants	Heart disease, nerve pain, depression, mouth sores, fatigue, PMS, insomnia, dermatitis, fatigue
	Hypothyroidism, depression, hair loss, weight gain, lowered immunity
	Fatigue, headaches, heart failure, heart palpitations, leg cramps, skin and nerve problems, weight gain
Anxiety medications	Weight gain, insomnia, heart palpitations, lowered immunity, increased risk of autoimmune disorders
Blood pressure medications	Loss of sex drive, prostate problems, loss of smell or taste, hair loss, slow wound healing, frequent infections, higher risk of cancer, leg cramps, high blood pressure, weight gain, bone loss
	Heart disease, irregular heartbeat, memory loss, muscle cramps, insomnia, disrupted sleep, increased risk of cancer, autoimmune disorders
	Heart disease, irregular or rapid heartbeat, bone loss, confusion, muscle weakness, thirst, leg cramps, frequent infections, high blood pressure, fatigue

	Fatigue, weakness, muscle and leg cramps, memory loss, higher risk of cancer, frequent infection, liver damage, higher risk of heart attack
Breathing medications	Hypothyroidism, depression, hair loss, weight gain, lowered immunity
Cholesterol medications	Heart disease, high homocysteine, fatigue, candida, higher risk of cancer, irritable bowel syndrome, frequent infection, hair loss, muscle pain, weakness, cramps, insomnia, vision problems
	Fatigue, weakness, muscle cramps, memory loss, shortness of breath, higher risk of cancer, frequent infections, liver damage, heart disease
Diabetes medications	Fatigue, weakness, muscle cramps, memory loss, higher risk of cancer, frequent infection, liver damage, heart disease
	Heart disease, high homocysteine, frequent infection, fatigue, anemia, irregular heartbeat, memory loss, increased risk of cancer, muscle cramps
Diuretics	Osteoporosis, heart disease, slow wound healing, frequent infection, leg cramps, depression, memory loss, lowered immunity, vision problems, enlarged prostate, edema, weight gain, hair loss, high blood pressure, fatigue, mood swings
Gout medications	Lowered immunity, fatigue, muscle cramps and weakness, edema, weight gain, low appetite, heart disease, dehydration, vision loss
Laxatives	Vision problems, high blood pressure, bone loss, rickets, hearing loss, heart disease, muscle weakness and cramps
	Irregular heartbeat, heart palpitations, muscle weakness and cramps, tiredness, water retention, weight gain
NSAIDs	Heart disease, high homocysteine, cervical dysplasia, higher risk of cancer, higher risk of birth defects, depression, diarrhea, gray hair, mouth sores, anemia, frequent infections, hypothyroidism
Oral contraceptives, hormone replacement therapy	Heart disease, fatigue, candida, increased risks of stroke and cancer, irritable bowel syndrome, depression, insomnia, lowered immunity, memory loss, irritability, nerve pain, hypothyroidism, inability to cope, higher risk of breast cancer
Salicylates	Fatigue, depression, osteoporosis, brittle nails, hair loss, edema, high cholesterol, high homocysteine, heart disease, high blood pressure
Thyroid medications	Anemia, weakness, brittle nails, irritability, fatigue, osteoporosis, tooth decay, high blood pressure, heart disease, insomnia, acid reflux, digestive problems, higher risk of cancer

SUPPLEMENTS TO BATTLE THE DRUG MUGGERS

SUPPLEMENT	NUTRIENTS	DRUG MUGGERS IT WILL BATTLE
B ₆	Vitamin B ₆ (pyridoxine)	Antibiotics, diuretics, antidepressants, acid-reducing medications, estrogen-containing drugs, theophylline
B ₁₂	Vitamin B ₁₂ (methylcobalamin)	Antibiotics, diabetes medications, cholesterol medications, estrogen-containing drugs, diuretics, acid-blockers, gout medications
Calcium	Calcium	Thyroid medications, salicylates, diuretics
Calcium/magnesium combination	Calcium, magnesium	Acid-reducing medications, blood pressure medications, salicylates, diuretics, thyroid medications, antibiotics, estrogen-containing drugs, laxatives
CoQ10	Coenzyme Q10	Blood pressure medications, diabetes medications, cholesterol medications, acid-reducing medications
D ₃	Vitamin D ₃	Cholesterol medications, laxatives
High-quality multivitamin	Men's or women's formula: vitamins A, C, D ₃ , E, K, B ₆ , B ₁₂ , thiamine, riboflavin, niacin, folic acid, biotin, pantothenic acid, calcium, iodine, magnesium, zinc, selenium, copper, manganese, chromium, molybdenum	Antibiotics, blood pressure medications, diabetes medications, acid-reducing medications, cholesterol medications, estrogen-containing drugs, salicylates, NSAIDs, diuretics, antidepressants, laxatives, gout medications, colchicine
Iodine and selenium	Iodine iodide, selenium	Breathing medications, fluoride toothpaste, vegetable oil, citrus-flavored soda
Trace minerals	Boron, magnesium, copper, manganese, phosphorus, selenium	Blood pressure medications, diuretics,

acid-reducing medications,
estrogen-containing drugs

SUPPLEMENT	BENEFITS*
B ₆	Works with folic acid to break down homocysteine, supporting a healthy cardiovascular system; strengthens the immune system; promotes kidney health; helps prevent various nervous and skin disorders; acts as a natural diuretic; has antiaging properties; reduces dry mouth and urination problems caused by tricyclic antidepressants
B ₁₂	Supports red blood cell production and breakdown of homocysteine, strengthening the cardiovascular system; promotes energy production; maintains a healthy nervous system; properly utilizes fats, protein, and carbohydrates; enhances concentration, mood, memory, and balance; protects against secondhand cigarette smoke
Calcium	Boosts bone and oral health, cardiovascular health, digestive health, and immune function
Calcium/magnesium combination	Helps maintain strong bones and healthy teeth; supports digestive tract function and colon health; boosts cardiovascular and nervous system health, healthy metabolism, and mental health
CoQ10	Boosts heart health; efficiently breaks down fats, protein, and carbohydrates; acts as an antioxidant; promotes energy production
D ₃	Strengthens the immune system; supports bone, joint, muscle, and skin health; has antiaging properties; supports colon, pancreas, and stomach health; helps maintain healthy blood pressure and cardiovascular health; protects the brain and reproductive organs; decreases risk of diabetes and metabolic syndrome; improves mood
High-quality multivitamin	Strengthens the immune system; promotes healthy vision and bone, skin, and nail strength; has antioxidant and antiaging properties; boosts digestive health, wound healing, and nervous system function; promotes metabolic function and cardiovascular health; prevents neural tube birth defects; promotes energy, sleep, mental health, and the list goes on!
Iodine and selenium	Supports female reproductive health; boosts thyroid health; promotes metabolic function and energy production
Trace minerals	Supports bone health; strengthens immune system; promotes healthy blood pressure; maintains nervous system function; helps digestive system; boosts heart health and red blood cell production; has antioxidant properties; supports metabolic functions

**These statements have not been evaluated by the Food and Drug Administration. This book is not intended to diagnose, treat, cure, or prevent any disease.*

Part II

Vital Nutrients

5

Beta-Carotene and Vitamin A

A colorful, reddish-orange pigment, beta-carotene occurs naturally in the leaves of plants and in reddish-orange vegetables such as sweet potatoes, pumpkins, tomatoes, and carrots. Beta-carotene is actually one of many such pigments known as carotenoids. When the green chlorophyll in plants dies in the fall, it is the leftover beta-carotene that you see in the leaves imparting those beautiful autumn colors.

Once inside the body, beta-carotene is converted to vitamin A. Since vitamin A is a fat-soluble vitamin, it gets into fatty tissue—fat cells in your heart, brain, lungs, liver, and skin. That's a good thing. It may also help with asthma and lung function.

Vitamin A comes from two sources: a category of substances called retinoids, which are derived from animal sources and include retinol, and another group of molecules called carotenoids, which are derived from plants. As already mentioned, the carotenoids include beta-carotene and astaxanthin.

Among other benefits, vitamin A in the form of retinol is a powerful skin nutrient. When applied topically, it penetrates deep down and gets into the layers of collagen and elastin, the tissues that support the skin. This is where retinol begins to run damage control. It's a strong antioxidant, so it cleans up nasty, damaged cells and gunk that has accumulated in your skin. It's found in a gazillion skin care creams for women who want to diminish wrinkles and beautify their skin. If you buy a retinol-containing cream, make sure it says natural retinol on the label and is not made from a synthetic copycat.

Speaking of synthetics, did you know that the oral drug isotretinoin (Accutane, Sotret) is a morphed version of high-dose vitamin A? Introduced many years ago, this drug is often prescribed for teenagers with acne. My problem with Accutane (and also with high doses of vitamin A) is that it has been

linked to birth defects. If you use this medication, make doubly sure that you are not pregnant or likely to become pregnant. Accutane was in the news more recently for its possible association with suicide. For real. This isn't confirmed, but it makes me wonder if there are better ways to treat our children's acne.

We also have another vitamin A–derived skin cream in the pharmacy called Retin-A (tretinoin). It's a pricey medication that requires a prescription. As it's derived from vitamin A, it works on a similar principle and is helpful at smoothing skin and clearing acne. There are very few risks (if any) because this is applied to the skin, unlike Accutane, which is taken orally.

Excessive amounts of vitamin A in supplement form can be toxic, but beta-carotene is safer because your body will convert only as much vitamin A from beta-carotene as it needs. Vitamin A confers many health benefits, including supporting your eyesight, fertility, and immune function. It also supports healthy teeth, bones, and skin. One other fascinating benefit is that it acts as a kind of internal sunscreen and offers a little protection from the sun's rays.

Vitamin A is so important to skin that studies suggest it can protect against skin cancer as well as cancer of the mouth, bladder, breast, stomach, lungs, and cervix. It can be useful in treating myriad skin problems, including eczema, dermatitis, brown spots, and psoriasis.

The first signal of vitamin A deficiency shows up in the eyes. It may come in the form of poor night vision, dry eyes, vision loss, or cornea problems. It's also possible to experience an oddity such as gray patches in the whites of the eyes. These are called Bitot's spots. Blindness is also possible with long-term deficiency.

Because vitamin A protects the immune system from free radical damage, a deficiency increases your risk of infection and cancer. Some women develop cervical dysplasia, an abnormality in the cells of the cervix, in part because of vitamin A deficiency. Dry or rough skin can also signal a deficiency.

Drug Muggers of Vitamin A

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium) Famotidine (Pepcid and
Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox,
Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Roloids)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics

Neomycin (eyedrops, eardrops, antibiotic ointments)

Antigout

Colchicine (Colcrys)

Cholesterol Agents

Cholestyramine resin (Questran)

Colesevalam (WelChol)

Colestipol (Colestid)

Lipase Inhibitors

Orlistat (Alli, Xenical)

Oral Contraceptives (not a drug mugger, may lead to increases in plasma levels of vitamin A)

MISC:

Alcohol

Fat blockers sold as OTC diet aids (kidney bean extract or starch neutralizer, for example)

Malabsorption disorders like Celiac, Crohn's, IBS, pancreatic insufficiency

Mineral oil

Olestra (a fat substitute commonly found in light potato chips)

Beta-Carotene: Put This on Your Plate

Sweet potatoes, carrots, butternut squash, red peppers, tomatoes, pumpkin, spinach, collard greens, cantaloupe, apricots, peaches, and raw broccoli. Lightly sautéing or steaming vegetables seems to make it easier to absorb beta-carotene, unlike many other nutrients that are destroyed by light cooking. If you want vitamin A itself, good food sources include animal meats such as steak, liver, kidney, butter, dairy products, and eggs.

An Absurdly Inexpensive Way to Feel Better

It's important to remember that beta-carotene is a precursor to vitamin A, but it is not actually vitamin A. The doses listed below are for beta-carotene.

For general health: About 5–15 mg (8–25,000 IU) per day

Drug mugger dose: 15–20 mg (25,000–33,340 IU) per day

Pregnant women: Follow your doctor's orders, but generally speaking, limit vitamin A to no more than

10,000 IU per day

Just So You Know

I prefer that you take beta-carotene rather than vitamin A unless your health-care provider specifically prescribes vitamin A. Beta-carotene is water soluble, so your body can convert it safely to vitamin A and excrete the rest, whereas vitamin A is fat soluble, so it's possible to accumulate too much.

Only buy natural forms. Synthetic forms don't offer antioxidant protection because they are not the real deal. Some experts (and I'm one of them) think that synthetic versions of beta-carotene are downright dangerous for you. Some forms appear to increase the risk of cancer in smokers, who often take the supplement. This was found in at least three research trials. That said, no study has checked to see whether natural beta-carotene could increase the death rate, but I'm going to bet it doesn't. A synthetic product will usually just say beta-carotene on the label and offer a dosage. The natural form will usually have these phrases on the label: "from *D. salina*" (for *Dunaliella salina*, an alga), "from an algae source," "natural beta-carotene," or "from a palm source."

You are getting too much beta-carotene if you start to develop diarrhea, a yellow-orange tinge to your skin that goes away on its own, easy bruising, or joint pain. Any of these things may occur with dosages of 50 mg (100,000 IU) per day or less if you are sensitive.

Install Your Nutrient Security System

Many delicious foods offer you a hefty dose of beta-carotene or vitamin A. Absorption of these nutrients is enhanced if you eat them along with some type of fat, such as a healthy oil. In my home, after I bake a sweet potato, I sprinkle it with a little cinnamon and cold-pressed flaxseed oil while it's still hot. I also sauté kale in grape seed oil and fresh garlic. The idea is to heat (or cook) these foods gently for a few minutes until the cell walls split open and the carotenes spill out into the fat (the

oil), which easily totes the beta-carotene into your own cells. These nutrients have to penetrate your fatty cells for you to get the best effect.

What's in My Cupboard?

Carrot Essence by Green Foods: This carrot powder combines beta-carotene from organically grown carrots along with vitamin C, another powerful antioxidant. The vitamin C is naturally derived from the acerola berry, so it's totally natural. The makers have not added sugar, salt, wheat, gluten, soy, or artificial colors. I've used this 100 percent pure brand in my home for years. It's easy to add a scoop to smoothies. If you want a quick pick-me-up, just add water to it. It contains 11,000 IU beta-carotene and 34 mg vitamin C per dose. I use this on days when I don't feel like breaking out my juicer and starting from scratch. See their entire product line of powdered natural foods and drinks at www.greenfoods.com.

BioAstin by Nutrex Hawaii: This carotenoid, astaxanthine, is 11 times more powerful than beta-carotene in terms of squashing free radical damage. It is also thought to be 550 times stronger than vitamin E. If you want a strong antioxidant, this newly discovered carotenoid is similar to beta-carotene but stronger. Sold at health food stores nationwide.

Natural Food Carotene Complex by Nutraceutical Sciences Institute (NSI): This product contains natural carotenes from the alga *D. salina* and spirulina extract, which I love because it's loaded with other nutrients and minerals. It is also gluten free and sugar free.

Oceanic Beta-Carotene 25,000 IU by Solgar: These softgels contain natural beta-carotene derived from *D. salina* along with other important carotenoids such as alpha-carotene, cryptoxanthin, zeaxanthin, and lutein for a synergistic blend of provitamin A substances (a blend of compounds that goes on to form vitamin A). It is free of all allergens and is sold at most health food stores.

Carotenoid Complex by Country Life: These softgels contain natural beta-carotene derived from *D. salina* as well as lutein, zeaxanthin, lycopene, broccoli and pumpkin concentrate, carrot seed oil, and astaxanthin (derived from krill). Each softgel delivers 25,000 IU beta-carotene.

Beta Carotene by Pure Encapsulations: This product can be purchased online or through your doctor. It contains a broad spectrum of natural carotenoids from *D. salina*, including zeaxanthin and lutein, among others. It's also gluten free and vegetarian. Contact information: www.purecaps.com.

Arctic Cod Liver Oil by Nordic Naturals: If you want a natural form of vitamin A itself instead of its precursor beta-carotene, then use cod liver oil. It's a fantastic source derived from an animal. This is the one I have tasted and liked. My mom swears by this one and has taken it for years. You can buy it in convenient softgels, which are tasteless, or in strawberry-, peach-, or orange-flavored liquids. It doesn't taste like fish! I always recommend this for people with neurodegenerative disorders, such as multiple sclerosis, amyotrophic lateral sclerosis (ALS), and arthritis; depression; memory problems; and especially heart disease and atherosclerosis. Contact information: www.nordicnaturals.com.

Allergy A and D₃ by Twinlab: This product was designed with people who don't eat fish in mind, or for those who are allergic to fish or fish oil products. The capsules contain 10,000 IU of a natural, preformed kind of vitamin A called retinyl acetate, along with 400 mg vitamin D₃. It is sold nationwide.

Lutein Lycopene Carotene Complex by Solgar: This multitasking product contains various carotenoids along with 10,000 IU beta-carotene in each softgel. The beta-carotene (and alpha-carotene) comes from pure carrot oil and *D. salina*. The lutein and zeaxanthin are derived from marigold flowers, and the lycopene comes from tomatoes.

6

Biotin

It's safe to say that biotin may make you more beautiful. If you have brittle nails or slow-growing, dull hair, there's a good chance you're deficient.

In one study published many years ago in the *Journal of Nutrition*, researchers gave mice a combination of biotin and a few other B vitamins and found that natural hair color could be partially restored in old animals. The color transformation occurred by supplementing with natural forms of the nutrients (as found in animal feed), not by supplemental multivitamins. As exciting as this may be for silver-haired seniors, I must tell you that I've not been able to find a solid human clinical trial that proves biotin restores hair color in people.

While it might not erase gray, there are plenty of studies that show biotin nourishes the skin and hair, as well as the liver, pancreas, and heart. So obviously its role goes way beyond beautification. Its most important one, in fact, is to help you break down food, namely carbohydrates, fats, and protein. It also helps regulate cholesterol and blood sugar.

Biotin, also known as vitamin B₇, belongs to the B complex family of vitamins, and like all vitamin Bs, it dissolves in water, not fatty tissue. But did you know that it is sometimes referred to as vitamin H? The "H" is for *haut*, which means "skin" in German.

The human intestinal tract can make some biotin. It is not made in the cells. The manufacture of small amounts of biotin in the gut happens thanks to the hard work of beneficial bacteria. A flourishing, natural, healthy camp of friendly bacteria is absolutely essential to making biotin. If you have poor gastrointestinal function, low amounts of healthy normal intestinal flora, or chronic diarrhea, you will become deficient in biotin. This explains why antibiotics are drug muggers of both probiotics and biotin. You can't make biotin without the presence of the good microorganisms that make up your

intestinal flora. In fact, biotin is produced naturally by all sorts of microorganisms such as bacteria, fungi, algae, and a few plants.

Symptoms of deficiency may include hair loss (alopecia), high cholesterol, blood sugar imbalances, liver enlargement, cardiac arrhythmias, depression, abnormal skin sensations (parasthesias), seborrheic dermatitis, low appetite, poor immunity, and muscle aches or pain. Children with low biotin may act withdrawn and show developmental delays. Because biotin works directly in the Krebs cycle (the chemical reactions in your body that release energy from food), it makes sense that a biotin deficiency could cause tiredness. Biotin also helps reduce symptoms of zinc deficiency because it extends the life span of zinc. People with diabetes often show deficiencies in both biotin and zinc. This is one of the safest and best B vitamins to take as a supplement.

Drug Muggers of Biotin (Vitamin B₇)

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Butalbital-containing drugs (Fioricet, Fiorinal, Zebutal)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (AlternaGEL, Amphojel)
Calcium carbonate (Rolaids, Titalac, Tums)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)
Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Sulfamethoxazole and trimethoprim (Bactrim, Septra)
Tetracycline (Sumycin)

Anticonvulsants: When supplementing for this particular depletion, space your vitamin at least 4 hours away from the anticonvulsant medication.

Carbamazepine (Carbatrol, Tegretol)
Oxcarbazepine (Trileptal)
Phenobarbital (Solfoton)
Phenytoin (Dilantin)
Primidone (Mysoline)
Zonisamide (Zonegran)

Antivirals

Delavirdine (Rescriptor)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Climara, CombiPatch, Estraderm, EstroGel, Menostar, and many others)

Estrogen-containing drugs (Estrace, Estring, Femring, Premarin)

Estrogen and progestrin (Activella)

Estrogens, conjugated (Prempro, Premphase)

Ethinyl estradiol (found in many birth control pills)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides (Sulfa antibiotics, some diabetes medications)

MISC:

Alcohol

Any drug that depletes beneficial bacteria in the gut is a drug mugger of biotin.

Estrogen dominance

Nicotine

Raw egg whites

Biotin: Put This on Your Plate

Peanuts, hazelnuts, almonds, soy protein, cheese, beef liver, cauliflower, brewer's yeast, egg yolks, wheat germ, cashews, yogurt, sweet potatoes, spinach, Swiss chard, legumes, haddock, salmon, tomatoes, avocados, bananas, and canned tuna.

An Absurdly Inexpensive Way to Feel Better

For general health: 100–1,000 micrograms (mcg) per day

Drug mugger dose: 1,000–5,000 mcg per day

Just So You Know

Biotin is usually found in supplements as D-biotin, and this is just fine. There are high concentrations of this nutrient in royal jelly (a bee product) and brewer's yeast. Hair, skin, and nail formulas often contain 2,000 to 5,000 mcg. Excess biotin is eliminated in the urine, and this nutrient appears to be nontoxic, even when taken in high doses (up to 5,000 mcg per day). Biotin works best in conjunction with the rest of its family members, all found in a B complex. One more thing: Save your money on the shampoos that claim to include biotin for hair growth. It's fine if it's in there, but only nutritional supplements will allow you to get the active form of biotin into your gut and into your cells. In a shampoo, all of it swirls down the drain along with your money. Point: Take it by mouth; don't splash it on your head.

Install a Nutrient Security System

Most people think that eating eggs will sufficiently increase their biotin levels, but this isn't true unless the eggs are raw, and I don't recommend eating raw eggs. Biotin is found naturally in the protein in eggs. This protein contains a smaller peptide called avidin, which binds to the biotin like glue, keeping this B vitamin intact and preventing you from absorbing it. You want this love affair to break up so that the

biotin becomes available to you for absorption. Cooking the eggs solves the avidin-biotin problem because the avidin hates heat. When you cook the egg, you break the “lovers” apart, which is why many experts suggest scrambled eggs as a source for biotin.

Not getting enough biotin when you think you have your bases covered is a big deal because biotin deficiency could suppress your levels of human growth hormone (HGH) and IGF-1 (insulin-like growth factor 1), according to a 2009 study published in the *European Journal of Nutrition*. HGH and IGF-1 are different hormones (chemically speaking), but they both serve to promote youth and growth, help build muscles, and have an antiaging effect on the body. Besides keeping us youthful, they protect against cardiovascular disease, arrhythmias, osteoporosis, wrinkling, gray hair, weight gain, depression, and muscle wasting. No wonder biotin keeps us beautiful, and now we have the science to prove it! In summary, the installation of a nutrient security system that includes biotin can make us beautiful inside and out. It works best in tandem with its sister B vitamins—B₁, B₆, folic acid, and the rest, so take your biotin along with a full-range B complex. And don't rely on eggs!

What's in My Cupboard?

Dr. Ohhira's Probiotics 12 Plus: This is a fantastic combination of probiotics, along with many B vitamins, minerals, and amino acids. It contains a synergistic blend of beneficial bacteria along with biotin and other B vitamins, minerals, and amino acids. Since biotin is manufactured by intestinal microflora, it makes sense that a probiotic formula would enhance your body's own ability to produce normal levels of biotin. This brand is a capsule and is produced using non-GMO (that's short for genetically modified) ingredients. *Note:* You need healthy bacteria in your gut in order to produce biotin.

For Longer Life Biotin 1% by Life Extension: This is a powder. You just mix up whatever dosage you like in water,

juice, or a smoothie. This will go a long way because $\frac{1}{8}$ of a heaping teaspoon gives you 5,950 mcg daily.

Super Potency Biotin by Nature's Bounty: Each capsule gives you 5,000 mcg (or 5 mg) per dose.

Biotin by Swanson Health Products: This product contains 5,000 mcg per capsule.

Super Biotin by Puritan's Pride: Each capsule contains 5,000 mcg biotin.

Bluebonnet Ultimate Hair and Nail Formula: These vegetarian caps contain a comprehensive list of vitamins (including biotin), minerals, and amino acids all designed to support beauty and hair growth. The daily dose of 3 capsules contains 1,000 mcg of biotin.

Biotin by Natural Factors: Each tablet contains 300 mcg of biotin.

Biotin 1000 mcg by Nature's Way: These dissolvable lozenges contain 1,000 mcg of biotin. Biotin is helpful in creating normal skin and scalp secretions, so this is a tasty way to look pretty! It helps with dry scalp and seborrheic dermatitis.

7

Calcium

People think calcium is just for bones. Sure, it's needed for both bones and teeth, but it's also necessary for healthy blood pressure. Did you know that calcium also helps make your muscles work properly and more comfortably? If you have muscle cramps or spasms, you may be low in calcium. A deficiency could put you at greater risk for osteoporosis, tooth decay, high blood pressure, heart disease, insomnia, acid reflux, digestive problems, obesity, diabetes, and cancer.

Calcium is needed to keep weight off as well. If you have a calcium deficiency, your body will try to repair itself by sending messages to your parathyroid glands and your kidneys. In turn, these organs release parathyroid hormone and calcitriol. These hormones then increase the amount of calcium available in the body, but in doing so, they stimulate the production of fat and also help the body hold on to it very stubbornly. Simply put, low calcium means you store more fat on your butt or around your belly!

The calcitriol hormone I just mentioned is the active form of vitamin D, and it behaves as a hormone in this form. Calcitriol's effects on the body are usually beneficial. Like every good thing, however, it has a negative side. Too much calcitriol might squeeze your arteries, causing high blood pressure. Yep, that's right! Without being too technical, very low calcium triggers higher calcitriol, which in turn causes high blood pressure (to go with that spare tire on your belly). See, I told you, calcium is important. It's so much more than a bone builder!

If you're one of those women who feels like biting everybody's head off during your menstrual cycle, calcium can purge you of those devilish thoughts. It seems to control mood swings, calm feelings of irritability, lessen breast tenderness, and reduce cravings for sweets. Finally, it has a protective effect on the colon, preventing the formation of polyps, which

may lead to colon cancer. Many people who don't get enough green veggies run out of calcium. Green vegetables have a lot of calcium—much more than milk. Does that surprise you? Where do you think the cows get their calcium from? It's in the grass they eat! Cows graze on greens all day, and I don't see any of them developing hip fractures and osteoporosis.

People who have suffered an unexplained bone fracture can bet that they're low in calcium and probably a lot of other minerals, especially magnesium. There's an interesting relationship between calcium and magnesium because magnesium is necessary for calcium absorption. Without enough magnesium, calcium can collect in soft tissues and cause joint pain. Not only does it collect in the soft tissues of people with arthritis, but the calcium levels in their blood and bones are reduced. You would think you'd need more calcium to counteract this problem, but taking calcium supplements only worsens the situation. Magnesium taken in proper dosages can actually solve the problem of calcium deficiency for these people and make calcium supplementation much safer. The magnesium pushes the calcium out of the soft tissue and into the bones where it's needed.

Taking calcium without enough magnesium throws the body out of kilter and may be harmful to some people, especially if they are also very acidic—meaning that their urine measures in the acid range according to urine test kits, such as litmus paper or Chemstrips. So the bottom line is that many supplements combine calcium and magnesium to enhance absorption and provide the benefits of both minerals. These combos are intelligent. Vitamin D is also crucial to help the body absorb calcium, so be sure to get enough sunlight each day or take a D₃ (cholecalciferol) supplement as well. Be warned, though, too much vitamin D and you will see a backlash of too much calcium in the blood.

Drug Muggers of Calcium

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Analgesics

Butalbital-containing drugs (Fioricet, Fiorinal, Zebutal)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Tums, Titalac, Rolaids)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)
Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Septra, Bactrim)

Tetracycline (Sumycin)

Anticonvulsants

Carbamazepine (Carbatrol, Tegretol)

Ethosuximide (Zarontin)

Gabapentin (Gabarone)

Methsuximide (Celontin)

Oxcarbazepine (Trileptal)

Phenobarbital (Solfoton)

Phenytoin (Dilantin)

Primidone (Mysoline)

Valproic acid (Depakene)

Antigout

Colchicine (Colcrys)

Antiviral Agents

Delavirdine (Rescriptor)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

ACE inhibitor class:

Captopril (Capoten)

Enalapril (Vasotec)

Lisinopril (Prinivil, Zestril)

Quinapril (Accupril)

Calcium channel blockers: These may interfere with calcium supplements. The data is controversial, but it's best to take your calcium supplement at least 2 hours away from your medication. Examples of medications in this class include verapamil and any drug that ends in "dipine," like nifedipine, felodipine, amlodipine, and others.

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Diuretics, thiazide:

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Diuretics, sulfonamide:

Indapamide (Lozol)

Possibly the potassium-sparing diuretics, however this is not conclusive

Cardiac Glycosides

Digoxin (Digitek, Lanoxicaps, Lanoxin) (High levels of calcium may increase the risk of digoxin toxicity, and low levels of calcium reduce digoxin's effectiveness. If you take digoxin, your doctor should monitor your calcium levels closely.)

Corticosteroids

Betamethasone (Diprolene, Luxiq)

Dexamethasone (Decadron)
Fluocinolone (Synalar topical)
Methylprednisolone (Medrol)
Prednisolone (Prednisol)
Prednisone (Deltasone)
Triamcinolone (Aricin)

Inhaled corticosteroids:

Budesonide (Rhinocort, Symbicort)
Flunisolide (Nasarel, Nasacort)
Fluticasone (Flonase)

Cholesterol Agents

Cholestyramine resin (Questran)

Hormone Replacement Therapy/Oral Contraceptives

Estrogens, conjugated (Prempro, Premphase)
Estradiol (Activella, Climara, CombiPatch, Estrace, Estraderm, Estring, EstroGel, Menostar)
Estrogen-containing drugs (Femring) There are dozens!
Ethinyl estradiol (found in many birth control pills)

Laxatives that contain magnesium (like magnesium citrate or Milk of Magnesia)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Salicylates (Many substances, both drug and nondrug, contain this chemical. I've listed just a few here.)

Caffeine and aspirin (Fiorinal)
Magnesium salicylate (Mobidin)
Oxycodone and aspirin (Percodan)
Salicylic acid or aspirin (Bayer, Ecotrin, St. Joseph)
Salsalate (Disalcid)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamide (Sulfa antibiotics, some diabetes medications)

Thyroid Medications (Important: Separate calcium administration from thyroid medication by 4 hours or more.)

Levothyroxine (Synthroid, Levoxyl, Thyrolar)

MISC:

Benzoates

Beta hydroxy acid

Estrogen dominance

Many artificial food colorings and flavorings

Mineral oil

Menthol

Mint, peppermint, and spearmint

Phenylethyl salicylate (a fragrance)

Calcium: Put This on Your Plate

Turnip greens, spinach, mustard greens, collard greens, basil, thyme, cinnamon, blackstrap molasses, Swiss chard, yogurt, kale, mozzarella cheese, cow's milk, sardines, celery, fennel, green beans, garlic, tofu, figs, and quinoa.

An Absurdly Inexpensive Way to Feel Better

For general health: 200–1,200 mg per day taken with food

Drug mugger dose: 600–1,500 mg per day taken with food

Just So You Know

Calcium citrate and calcium gluconate are ideal forms of supplemental calcium. Calcium carbonate is harder to digest and seems to create more acid in the stomach after it leaves, so I don't recommend calcium carbonate supplements for people with heartburn, reflux, gastroesophageal reflux (GERD), or ulcers. Calcium supplements made from bone meal and dolomite may be high in elemental calcium, but on occasion, if they are of poor quality, they may contain contaminants such as lead and other toxic metals. Most forms of commercial calcium on the market today are derived from limestone, and do you think I recommend that you include rocks in your diet? Of course not, so please invest a little bit more in your calcium supplementation program and get the most bioavailable forms, the kind that are easy on the stomach and actually get into your bones. Pretty labels that promise to protect your bones and prevent osteoporosis don't always contain the right form of calcium, and they can be a bit deceptive to the naive consumer. Also remember that calcium is better absorbed when you have a little magnesium, vitamin D₃, or vitamin K₂ on board. That's why you'll find many commercial formulas in combination with one or more of these nutrients.

I love calcium, and I want you to feel safe replenishing what the drug mugger stole. However, like any good nutrient, too much is bad for you. Studies have shown that prolonged supplementation with calcium salts or consuming high dosages may cause calcium deposits to form in abnormal locations—where there is no bone—and these calcifications are easily visible on X-rays. This may be an explanation for why so many postmenopausal women get breast calcifications. Remember, they are routinely told to take calcium supplements after menopause to protect their bones.

If enough is deposited in your blood vessels, however, it apparently can cause a condition called coronary artery calcification. This is exactly what New Zealand researchers found during a study initially intended to evaluate the effects of calcium on bone health. Turns out the risk for heart attack was about 1¹/₂ times greater in the group receiving the

supplement than in the placebo group. In fact, when everything was considered together, stroke, sudden death, and heart attack were collectively more common in those on supplements than on placebos, even after accounting for high cholesterol, smoking, and high blood pressure.

Excessive calcium supplementation may elevate blood calcium levels and speed the calcification process in our fragile blood vessels, so if you do need calcium (because you take a drug mugger, for example), supplement safely by using high-quality bioavailable products and follow label directions for dosage or even take a little less.

Please know that the jury is still out about this; what you are reading is my opinion based on studies. There are certainly other studies that don't point to this problem. In a study published in the July 2010 issue of *Menopause*, for example, researchers concluded that moderate doses of calcium (with vitamin D₃) did not appear to alter the coronary artery calcified plaque burden in the 754 postmenopausal women who participated in the study. Whether higher or lower doses would alter the results remains to be seen.

A Mayo Clinic trial published in December 2009 similarly found no difference in aortic valve and coronary artery calcification in older women who took calcium supplements over a 4-year period.

Prolonged consumption of high dosages of calcium carbonate or other forms of calcium can occasionally cause an individual to develop a triad of health problems—hypercalcemia (excess calcium in the blood), metabolic alkalosis, and kidney damage. This triad is called milk-alkali syndrome or Burnett's syndrome. This isn't new information, but it bears repeating because we are all hammered with the concept that the more calcium the merrier. As far back as 1995, I found a report in a Baltimore medical journal that opened as follows: "Milk-alkali syndrome can be caused by ingesting large amounts of calcium carbonate. Coincident with the promotion of calcium carbonate as treatment for both dyspepsia and osteoporosis, milk-alkali syndrome is now a

common cause of hypercalcemia severe enough to require admission to the hospital.”

The good news is that calcium carbonate is so poorly absorbed through the GI tract that it is unlikely to cause any systemic problem for the vast majority of people taking it, especially if you stick to label dosages and don't overdo it. On the other hand, calcium carbonate does bind with other minerals in the gut, inhibits digestive enzymes, and can cause constipation. This doesn't mean that you are free and clear of developing milk-alkali syndrome; I just want you to feel confident that for the most part, it is rare and more frequently associated with high dosages and chronic ingestion of calcium.

Certain people seem to have a higher risk of developing hypercalcemia. They include individuals who have kidney insufficiency, excessive vitamin D intake, or hyperparathyroidism. You know you're taking excessive amounts of calcium if you have some of these early signs: constipation, anorexia, abdominal cramps, fatigue, nausea, headache, a metallic taste in your mouth, muscle weakness, muscle or bone pain, itching, dry mouth, kidney stones, iron deficiency anemia, or irregular heartbeat.

As calcium builds up, other late-stage symptoms sneak up on you, and they are so insidious that you may not even connect them to your dietary supplement. So be watchful for mental confusion, itchy skin, irregular heartbeat, frequent urination at night, severe thirst, coronary calcifications, and/or sudden onset of a seizure disorder.

Install a Nutrient Security System

There are several things you should do if you have concerns about building and maintaining your precious calcium stores. For one, include vitamin D in your regular daily supplement program. About 1,000 IU is all you need to boost vitamin D; however, you can take more if you also happen to take a drug mugger of vitamin D (see [Chapter 23](#) on page [277](#)). Magnesium assists calcium in its job, too, so taking a multitasking formula that contains calcium, vitamin D, and

magnesium might be perfect for you. There are many such products available at health food stores.

The other thing you should do is have your doctor do blood tests to evaluate your parathyroid and thyroid statuses. The parathyroid glands produce a hormone that tells the kidneys to conserve calcium and other minerals. When your thyroid gland is working well, it secretes another hormone called calcitonin that preserves calcium and other minerals and helps slow down the rate at which your bones break down. So healthy thyroids and parathyroids go a long way in preserving both your calcium stores and your bones!

What's in My Cupboard?

Bone Strength Take Care by New Chapter: This is a powerful blend of bone-building nutrients that include calcium derived from an alga (plant) source (*Lithothamnium calcareum*), which comes from pristine Icelandic shores. (I've been to Iceland, and everything there *is* pristine!) Best of all, our bodies understand how to incorporate this natural form of calcium. This is first on my calcium supplementation list. It offers genuine bone protection because it also contains other nutrients needed for bone health, such as strontium, magnesium, vitamin K₂, silica, and vitamin D₃.

Spirulina Pacifica by Nutrex Hawaii: Spirulina is a blue-green alga that occurs naturally in the ocean. This company is dedicated to the production of spirulina, which many experts call a superfood. Many people mistakenly think that the best source of calcium is milk, but as we've seen, that's not really true. Spirulina contains 300 percent more calcium than whole milk. To make this mineral-rich spirulina, Nutrex Hawaii uses ocean water drawn from a pipeline 2,000 feet deep in one of the world's cleanest oceans. It's available as a tablet or a powder, though people have a harder time getting used to the taste of the powder. You can mix it with apple juice, or just buy tablets. I take 3 to 6 tablets of this brand every day, and it makes my hair and nails grow like crazy.

Floradix Calcium Liquid by Flora: A lot of calcium supplements are the size of horse pills and are very hard to swallow. For this reason, I've included a liquid option that provides calcium in two excellent bioavailable forms, calcium gluconate and calcium lactate. This liquid can be diluted in water or juice, if you prefer. It provides 200 mg per capful, so dosing is easy. I love the inactive ingredients that this company includes: carrots, roselle flowers, spinach leaves, rose hips, locust seed flour, and juices from pear, mango, and orange.

Calcium Citrate and Malate by Nutraceutical Sciences Institute (NSI): This product contains an intelligent form of calcium along with a healthy amount of malic acid, an extract from apples that helps prevent leg cramps and muscle soreness. Do you know why an apple a day keeps the doctor away? It's the malic acid. This combination goes a long way for people with muscle aches, fibromyalgia, and restless legs.

Calcium Magnesium Citramate by Thorne Research: This product contains calcium and magnesium in a 1:1 ratio, 80 mg of each. It also has 240 mg of malic acid and is completely free of allergens, fillers, and magnesium stearate.

Calcium Citrate by Solaray: These chewable calcium citrate tablets are great for people who cannot swallow easily. The product is naturally sweetened with orange juice powder and stevia, a natural sweetener.

Magic Minerals by Dr. Dave's Stages of Life: I like this brand and took it myself for about 2 years because it provides minerals in a highly absorbable form. It made my nails grow like crazy. The reason I like it is because minerals work best if ingested as chelates. A chelate is an organic salt. When minerals are in the chelated form, the GI tract is able to absorb them more easily. If they aren't chelated properly and in a balanced manner, the minerals in your supplement will compete for absorption in your body and you may not get the full effect. Absorption is enhanced when the minerals are properly balanced relative to each other. This particular brand is a full-spectrum mineral supplement and provides 300 mg of calcium along with vanadium, chromium, magnesium,

potassium, zinc, and other cofactors needed to strengthen bones, lower blood pressure, and help with leg cramps.

Bone Strength Formula with KoAct by Life Extension:

These capsules contain 300 mg of calcium (chelated as calcium collagen chelate, so it's bioavailable) along with vitamin D₃. This product is available from many GNC retailers, online retailers, and Life Extension.

Calcium Hydroxyapatite Microcrystalline by Solaray:

This formula contains a unique multimineral supplement derived from freeze-dried calf bone. The freeze-drying process generally maintains intact the natural bone matrix, naturally occurring proteins, and glycosaminoglycans, meaning that there is more calcium that is bioavailable and it is easier on your stomach. Four gluten-free capsules contain 1,000 mg of calcium, along with other bone builders such as phosphorus, magnesium, manganese, zinc, and chromium.

8

Coenzyme Q10

The powerful antioxidant coenzyme Q10 makes energy for you by sparking the production of the energy molecule ATP (adenosine triphosphate), which every single cell in your body needs in order to function. Among other things, ATP provides the energy that helps facilitate blood sugar regulation, muscle contraction, disease prevention, brain health, and proper heart function. In fact, coenzyme Q10 is most famous for its role in the heart.

Enzymes are substances that help make chemical reactions take place. A coenzyme is a substance that helps an enzyme do its job. Coenzyme Q10 is one of many coenzymes in the body, and it's a really important one. Without adequate amounts of coenzyme Q10, we would literally die within minutes.

Coenzyme Q10 is often shortened to CoQ10 or Q. It is ubiquitous, meaning it's found everywhere, in all plant and animal cells. This explains why it's sometimes referred to as ubiquinone.

Unfortunately, as we age, the amount of CoQ10 the human body produces starts to dwindle. That's why taking a CoQ10 supplement can be so helpful. Indeed, no matter what your age, if your body is low in CoQ10, taking a supplement is helpful for many conditions. Multiple studies show that CoQ10 improves angina pectoris, arrhythmias, high blood pressure, shortness of breath, heart palpitations, and energy levels. It also protects cholesterol from harmful oxidation. This is a great supplement to take if you are fatigued or have heart disease or fibromyalgia. If you have suffered a stroke, it can help speed recovery and reduce damage from the stroke. It can also reduce your risk of Parkinson's disease.

CoQ10 can reduce your risk of—and reverse—congestive heart failure to some degree. It has been studied around the world, and there have been dozens of placebo-controlled studies on the treatment of heart disease with CoQ10. Many of

them confirm its effectiveness. Ironically, this vital nutrient is depleted by the very medications used to treat heart disease. Are you with me on this, or am I the only one who thinks this is loony?

The depletion of CoQ10 is becoming epidemic primarily because of the popular cholesterol-lowering drugs called statins, which interfere with the body's natural metabolic pathway. When statins block an enzyme called HMG-CoA reductase, cholesterol production slows down dramatically. Unfortunately, this is the exact same pathway where CoQ10 is produced too, hence the drug mugging effect. What people may not know is that this effect is dose dependent, meaning that the higher the drug dosage the more depletion of CoQ10. The damaging effect of this drug–nutrient depletion is most often seen in people with heart failure or in the elderly. Statin-induced CoQ10 depletion is completely preventable. You just have to know that the drug is mugging you of this nutrient, then you can supplement with CoQ10 while still remaining compliant with your medication. You might say that a CoQ10 supplement is the side-effect solution to statin drugs.

Hundreds of research papers have been written on the benefits of using CoQ10 for treating heart failure without significant adverse effects. Much of this research has been done by Peter Langsjoen, MD, a cardiologist in Tyler, Texas, who has 30 years of experience treating heart disease with CoQ10.

When I interviewed Dr. Langsjoen for this book, he said that “patients with heart failure from any cause have low CoQ10 blood levels, and the CoQ10 level in both plasma and heart muscle is the lowest in those patients with the most severe heart failure. Supplementation of CoQ10 in these patients repletes this deficiency and brings about dramatic improvement in heart function and quality of life.”

So there you have it. People with heart failure are often, if not always, deficient in CoQ10. That comes straight from the mouth of a leading world authority, and he should know! Do we make congestive heart failure (CHF) worse with statin cholesterol drugs? The literature suggests we do. Dr.

Langsjoen had this to say about CHF. “We are currently in the midst of a congestive heart failure epidemic in the United States, the cause or causes of which are unclear. As physicians, it is our duty to be absolutely certain that we are not inadvertently doing harm to our patients by creating a widespread deficiency of a nutrient critically important for normal heart function.”

Coenzyme Q10 protects cells from DNA damage, so it makes sense that it may also have anticancer effects. It is such a powerful antioxidant and is very “slippery,” so it goes into all of your cell membranes and even into the tiny energy-producing powerhouses (mitochondria) contained in each cell. That’s right, CoQ10 actually penetrates into every cell in your body, including your brain cells. It makes sense that drugs that deplete CoQ10 may leave you with a higher risk of cancer and memory loss in addition to heart failure.

Anyone with cancer is, of course, at greater risk of dying than the general population. And, in fact, this is precisely what a recent study points to. It’s not conclusive, but the cholesterol drug Vytorin (ezetimibe and simvastatin) is under scrutiny because a study suggests that users are more likely to die from cancer while taking the drug than those who don’t take it are. It’s worrisome, but it’s not a surprise to me, given that Vytorin and similar drugs are muggers of CoQ10.

The trouble started for Vytorin when the ENHANCE trial, completed in March 2007, showed that the expensive drug did not do any better at unclogging arteries or preventing plaque buildup than the cheaper generic statin simvastatin, which is also known to be a drug mugger of CoQ10. Then, in 2009, the SEAS (Simvastatin and Ezetimibe in Aortic Stenosis) study published in *Heart, Lung and Circulation* reported a disturbing link between the cholesterol drug and cancer. It concluded that “cancer incidence and cancer deaths were more frequent in the simvastatin/ezetimibe group.”

Ladies, pay attention: Several studies have looked at CoQ10 as a treatment for women with breast cancer, and there does appear to be some benefit.

One more important note: CoQ10 makes the body run more efficiently because it assists in hundreds of enzymatic reactions. So as your body's general health improves, you may be able to take a lower dosage of some medications or even discontinue them—with physician approval, of course. Your doctor may eventually reduce the dosage of your blood pressure meds, for example, because the CoQ10 kicks in and lowers it too.

The take-home point is that CoQ10 can dramatically reduce the side effects you may get from statin cholesterol drugs and can protect your brain, liver, and heart as well.

You'll find CoQ10 in organ meats like kidney, heart, and liver. Food sources are not so appetizing to me, so I take supplements. Today, it's easy to find the nutrient in supplement form. There are many high-quality brands sold in health food stores and pharmacies nationwide.

Readers of my syndicated column often ask me whether CoQ10 will work just as well as ubiquinol, which is a more active version of CoQ10 and more effective in my opinion. I tell them that if they can afford ubiquinol, go ahead and get it since it is more readily taken up by the bloodstream, especially in the elderly and those with heart disease.

Just to be sure about the best form of the supplement to take, I asked Dr. Langsjoen, who has been busy researching these molecules for decades. He said, "Patients with end-stage heart failure do not absorb standard ubiquinone CoQ10 [the orange, oxidized formulation that has been in use since 1967]. These critically ill heart failure patients absorb the new ubiquinol formulation quite well with lifesaving effect."

Did you hear that? "Lifesaving effect!" There isn't one medication that I can take off my pharmacy shelf and feel this confident about when it comes to treating your precious heart!

Drug Muggers of Coenzyme Q10

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Allergy Drugs

Promethazine (Phenergan)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel) Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Rolaids, Titalac, Tums)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antiarrhythmics

Propafenone (Rythmol)
Sotalol (Betapace)

Antibiotics (a few examples)

Amoxicillin (Amoxil)
Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Septra, Bactrim)

Tetracycline (Sumycin)

Antidepressants, Tricyclic

Amitriptyline (Elavil)

Amoxapine (Asendin)

Clomipramine (Anafranil)

Desipramine (Norpramin)

Doxepin (Sinequan)

Imipramine (Tofranil)

Nortriptyline (Pamelor)

Protriptyline (Vivactil)

Blood Thinner

Warfarin (Coumadin) (Talk to your doctor first, but CoQ10 may slightly reduce the effectiveness of this drug, so a higher dose may be needed. Taking CoQ10 still outweighs not taking it.)

Blood Pressure Drugs

Labetalol (Normodyne, Trandate)

Methyldopa (Aldomet)

ACE inhibitors:

Enalapril (Vasotec) (CoQ10 enhances this drug's effect)

Angiotensin II receptor antagonists:

Candesartan and HCTZ (Atacand HCT)

Telmisartan and HCTZ (Micardis HCT)

Beta-blockers:

Acebutolol (Sectral)

Atenolol (Tenormin)

Betaxolol (Kerlone)

Bisoprolol (Zebeta, Ziac, Cardicor)

Carvedilol (Coreg)

Metoprolol (Lopressor and Toprol XL) (CoQ10 enhances the benefits of this particular beta-blocker.)

Nadolol (Corgard)

Propranolol (Inderal)

Timolol (Timoptic eye drops)

Centrally acting alpha-agonist hypotensive agents:

Clonidine (Catapres)

Diuretic, sulfonamide:

HCTZ or hydrochlorothiazide (any of the dozens of drugs containing this, including Dyazide, Maxzide, Avapro HCT, Hyzaar, Micardis HCT)

Indapamide (Lozol)

Moexipril and HCTZ (Univasc) *Diuretics, thiazide:*

Chlorothiazide (Diuril), Chlorthalidone (Hygroton), Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Cancer Drugs

Doxorubicin (Adriamycin) (Pretreating yourself with CoQ10 can help reduce damage to the heart from this chemotherapy drug.)

Cholesterol Reducers

Fibrates:

Fenofibrate (Tricor)

Gemfibrozil (Lopid)

Statins:

Atorvastatin (Lipitor, Advicor)

Fluvastatin (Lescol)

Lovastatin (Mevacor, Altocor, Altoprev)

Pitavastatin (Livalo, Pitava)

Pravastatin (Pravachol, Lipostat, Selektine)

Rosuvastatin (Crestor)

Simvastatin (Zocor, Lipex)

Simvastatin and ezetimibe (Vytorin)

Simvastatin and niacin (Simcor)

Diabetes Medications

Acetohexamide (Dymelor)

Chlorpropamide (Diabinese)

Glimepiride (Amaryl)

Glipizide (Glucotrol)

Glyburide (Diabeta, Glynase, Micronase)

Glyburide and metformin (Glucoavance)

Metformin (Fortamet, Glucophage, Glucophage XR,
Glumetza, Riomet)

Metformin and sitagliptin (Janumet)

Pioglitazone (Actos)

Repaglinide (Prandin)

Rosiglitazone (Avandia)

Tolazamide (Tolinase)

Tolbutamide (Orinase)

HIV Drugs

Psychiatric Drugs

Chlorpromazine (Thorazine)

Droperidol (Inapsine)

Fluphenazine (Prolixin)

Haloperidol (Haldol)

Thioridazine (Mellaril)

Coenzyme Q10: Put This on Your Plate

Beef, chicken, soybean oil, rainbow trout, peanuts, sesame seeds, pistachios, broccoli, cauliflower, organ meats, fish (especially tuna, herring, mackerel, sardines, and salmon), whole grains, sesame oil, and spinach

An Absurdly Inexpensive Way to Feel Better

For general health: 30–50 mg once or twice daily

Drug mugger dose: 50–200 mg once or twice daily

For cancer or heart disease: 100–200 mg two or three times a day (discuss with your doctor)

Just So You Know

Look for a CoQ10 supplement suspended in rice bran oil or olive oil rather than a dry, powdered capsule form. The oil-suspended version seems to slip into the body's cells more easily, and some studies show that the powdered form is not as bioavailable. If you do choose to take capsules, make sure you take them with food to enhance absorption. The fat in your meal makes the powdered CoQ10 work better.

Generally speaking, CoQ10 made in Japan is superior to CoQ10 produced in China. If you can't find this information on the label, you can always call the company and ask where their CoQ10 comes from.

The better absorbed form of CoQ10 (ubiquinol) is sold under the brand name Kaneka QH; it is off-white in color. If you take something other than this top choice, I prefer that you get softgel forms that are orange in color, the natural color of CoQ10 (ubiquinone). It's hard to overdo CoQ10 as it is extraordinarily safe. Sensitive people may experience stomach upset, headache, insomnia, dizziness, or light-headedness at higher dosages.

Install Your Nutrient Security System

The synergistic combination of carnitine and coenzyme Q10 can't be beat when it comes to weight loss. The amino acid carnitine pushes fat out of your cells, and the CoQ10 acts like a taxi and delivers the fat to your muscles so you can burn it off as energy. Try 1,000 mg L-carnitine and 100 mg CoQ10 (or 50 mg ubiquinol) each morning with breakfast or at lunch.

What's in My Cupboard?

Ultimate Omega + CoQ10 by Nordic Naturals: The makers of this product have combined omega-3 fatty acids (which lower cholesterol and unclog arteries, according to some studies) with CoQ10 to give you more bang for your buck. This combination goes well together, like peanut butter and jelly. It contains 60 mg of CoQ10, some vitamin E to keep it fresh, and more than 1,200 mg total of omega-3s. It's so good that it surpasses all pharmaceutical standards for freshness and purity. It's gluten free, dairy free, and does not contain heavy metals, PCBs, or dioxins. This is first on my list because you can replenish what a drug mugger stole and simultaneously work to lower cholesterol and triglycerides, improve energy levels, and even normalize heart rhythm.

Kaneka QH by Kaneka Nutrients: This product is fermented from yeast rather than bacteria. It's bioidentical to human CoQ10 and free of the impurities often found in synthetic versions. This is the CoQ10 that is usually used in clinical trials, even those funded by the FDA and National Institutes of Health. It's non-GMO, and it's kosher and allergy free.

CoQ10 Gels by Healthy Origins: This brand is free of soy, dairy, gluten, yeast, and artificial colors and flavors. It is suspended in pure olive oil and contains no GMO ingredients. I like the fact that the CoQ10 is all-natural and comes from Kaneka, the world's leading manufacturer of pure CoQ10. They also make another superior formula called **Ubiquinol**, which is better absorbed than the traditional oxidized ubiquinone form. After absorption, both forms are identical.

CoQmax CF by Xymogen: This product is sold online or through physicians' offices. When examined under a microscope, it is free of crystals. It has a special liquid carrier (patent pending) to help make the CoQ10 more bioavailable and usable than most other softgel and capsule formulas. This 50 mg formula is suitable for someone with digestive troubles. Your doctor can order it for you.

CoQ10 Liquid Softgel by Nature Made: Widely available, this is an affordable, pure version of CoQ10 with 200 mg per premium softgel.

CoQ10 + Food Complex by New Chapter: This is easy to digest, and it delivers CoQ10 and essential nutrients from cultured whole foods. Each dose offers an array of phytonutrients and antioxidants including beta glucan, glutathione, superoxide dismutase (SOD), lipoic acid, enzymes, and soy isoflavones.

Best Ubiquinol by Doctor's Best: Ubiquinol yields higher concentrations in the blood, so this product offers better antioxidant power. This brand is widely available and contains the reduced (active) form of CoQ10 that easily penetrates every cell in your body. Better absorption means more energy, too. It contains a little rosemary leaf extract to improve stability.

Ubiquinol CoQH by Source Naturals: This superior form of CoQ10 heightens absorption to yield higher concentrations of CoQ10 in the blood. Ubiquinol has been shown to provide a powerful antioxidant defense and also supports the body's cardiovascular and energy systems by aiding in the synthesis of ATP. The comprehensive benefits of ubiquinol also aid the liver, brain, and immune systems.

Cellular Active CoQ10 Ubiquinol by Bluebonnet: The name may be confusing, but it's pure ubiquinol, the body-ready form of this powerful antioxidant, at 200 mg per softgel.

MityQondria by Jarrow: This is a combination formula that contains 60 mg ubiquinol along with other nutrients that support mitochondrial health. These include alpha-lipoic acid, acetyl-L-carnitine, and creatine. This powerful blend can do a lot toward resuscitating your powerhouses (mitochondria) and playing a role in all the pathways needed to improve energy, muscle health, and heartbeat rhythm.

Folate (Vitamin B₉)

Folate gets its name from the Latin word *folium*, meaning “leaf.” The naturally occurring nutrient is called folate, but when laboratories produce a synthetic form of this vitamin, it’s referred to as folic acid. When you take a folic acid supplement, your body converts the folic acid back to an active form of folate. You can buy folic acid over the counter, or get higher dosages of it in prescription form.

Your body needs folate to make healthy red blood cells, which are necessary to shuttle oxygen all over your body. You also need folate to make healthy DNA—your genetic code—and I can’t overstate the importance of this role. Folic acid is best known for helping to protect unborn babies from developing neural tube defects, serious birth defects that deform the spine or brain. That’s why this nutrient is found in all prenatal vitamins.

Vitamin B₉ is so important that some anticancer regimens include folic acid in an effort to make tumors retreat. Even before a tumor develops, folic acid is useful. Let’s take a look at just one instance: A deficiency of folic acid may contribute to problems in the cervix. If a woman goes to her gynecologist and gets an abnormal Pap test result, the doctor may tell her that she has cervical dysplasia. This is a precancerous condition of the cervix that can progress to cancer if it’s not taken care of. Various treatments include medication and surgery, but many doctors overlook the fact that the problem may have occurred either because of a folate deficiency or because of the woman’s genetic inability to activate the nutrient when it is consumed—what I call folate misbehavior.

The problem is that when you have this inability to activate folate and use it properly, your level of homocysteine goes up. High homocysteine has been studied and found to increase a person’s risk for cancer, including cervical and uterine cancer. Folate also plays an important role in a basic detoxification

reaction known as methylation. When we methylate a compound, we help deactivate it and clear it from the body. So for a couple of reasons low folate means more toxins in the body. It's that simple, but it's huge in terms of health. DNA methylation helps to slow down the vigorous and dangerous activity of about 1,700 cancer-promoting genes. You need to methylate, but some people can't do it properly because of their genes. People with a defect in the gene responsible for using folate efficiently require extra amounts of vitamin B₉, whether or not they take a drug mugger.

A simple blood test for homocysteine will help determine whether your folate levels are optimal. You want it to be less than 7 micromoles per liter of blood. Homocysteine levels above 13 are a risk factor for heart attack, stroke, inflammation, Alzheimer's and Parkinson's diseases, autoimmune disorders, pain, and several other diseases. Elevated homocysteine levels also mean that you have trouble with methylation reactions and therefore have more damage to DNA and thus a higher risk of cancer.

I'm betting that many women have undergone cone biopsies or hysterectomies because they did not know that they were simply deficient in folate. How many women could have avoided surgery if only they realized the important role folate plays in reproductive health? Please put my book in the hands of every woman you love. Even if you ingest enough folic acid, you can develop cervical dysplasia if you are genetically incapable of fully utilizing folate. Just in case you're wondering, the heavily promoted Gardasil vaccine against human papillomavirus (HPV) does nothing to replenish folate. A young woman who gets this vaccine may feel that she's better protected from HPV and therefore from cervical cancer, but cervical problems could occur anyway because of a folate deficiency, among other things. A 2009 study published in *Cancer Epidemiology, Biomarkers and Prevention* confirmed this. The researchers concluded, "These findings are compatible with a role for folate in modulating the risk of cervical cancer, possibly through an influence over high-risk HPV infection."

Folate deficiency can also cause atherosclerosis, depression, irritability, pale skin, and megaloblastic anemia, a condition in which red blood cells become larger or uneven in size. When you run out of folate, you run out of energy as well. Confusion, forgetfulness, and diarrhea may set in. Sounds like many elderly folks, doesn't it? I think many of our seniors are clean out of this B vitamin. A deficiency could certainly account for those embarrassing "senior moments"—forgetting why you went to a particular room or what you were trying to say when you began a sentence. Sound like you? Keep reading.

Folate deficiency can occur fairly easily since the vitamin is water soluble. Because water-soluble vitamins are not stored in the body, they're only good for a relatively short period of time. Your body takes what it needs into the cells and tissues, and then you urinate the rest out. Because your body fails to store this nutrient, you have to be vigilant about replenishing anything that a drug mugger steals.

Folate also plays an important role in cardiovascular disease. The National Institutes of Health has identified many risk factors for cardiovascular disease, including an elevated LDL cholesterol level, high blood pressure, a low HDL cholesterol level, obesity, diabetes, and, most recently, an elevated level of homocysteine. This is where folate comes into play, because, as we've seen, folate reduces the level of homocysteine, especially when combined with vitamin B₆ and B₁₂ (methylcobalamin). Listen carefully, because folate, coenzyme Q₁₀, and many B vitamins can protect your heart. If you run out of any of those nutrients, your heart suffers.

Some drug muggers rob your body of multiple nutrients, leaving you very susceptible to a heart attack and high blood pressure. Is this farfetched? I think not. If you look at the drug mugger list for folate, you'll see a very popular diabetes drug called Avandia (rosiglitazone). I'm going to spend some time on this subject because it made so many headlines over the past 3 years, when people died while taking it. Even if you don't take this medication, the following information is crucial. And even if you don't have diabetes, it's likely that

someone you love does. Avandia controls blood sugar, and there are other medications that are just like it, including the most popular one, Actos. Avandia and Actos are drug muggers for folate, B₁₂, and CoQ10.

These nutrients are essential to your good health. If you run out of all three of them, you will more than likely develop heart trouble and possibly liver trouble. Would it surprise you to know that a study published in the *Journal of the American Medical Association* in July 2008 found that people who took Avandia had a 60 percent higher risk of heart failure and a 40 percent higher risk of heart attack? They also displayed a 30 percent higher chance of dying during the study period than patients given other oral diabetes medications. This isn't the first negative study on Avandia, nor is it the first problem with diabetes medication. In the late 1990s the drug Rezulin was taken off the market as a result of fatalities. The problem with Rezulin was liver failure. But the makers made millions of dollars before they decided to recall it. Oops, did I just say that out loud? My bad.

In May 2008 a study published in the *New England Journal of Medicine* reported more dangers. The heart problems were so blatantly obvious that it compelled the FDA to force the makers of the drug to post a black box warning on Avandia so that doctors could weed out which patients should get the medicine and which ones shouldn't. Remember, a black box warning is the strongest warning a drug can carry before it is yanked off the market.

Now here's the part where I just fell out of my chair. Scientists ultimately concluded that the evidence for heart trouble in correlation with this drug was inconclusive. Go to the funeral of someone who died while taking the drug and tell that to the family. Inconclusive? I'm not a brain surgeon, but you don't have to hit me over the head with the evidence. Here is my bigger concern, though. It's not only about Avandia. It's about all the medications out there just like it that people take. Is nobody but me (and now you!) making the connection between side effects and drug muggers?

If you take Avandia and run out of folate, B₁₂, and CoQ10 because of its drug mugging effect, you are asking for heart (and liver) trouble. The black box warning is just an alert that trouble could occur in certain patients. But warnings don't offer a solution for avoiding heart trouble in the first place. These warnings are for doctors to read. It isn't always on your drug information sheet. Unless your doctor tells you, you may not even know, unless, of course, you are reading this book.

I'm often asked whether Actos (pioglitazone) is as dangerous as Avandia. According to a study published in August 2009 in the *British Medical Journal*, Actos appears to be safer. Specifically, researchers concluded, "Among older patients with diabetes, pioglitazone is associated with a significantly lower risk of heart failure and death than is rosiglitazone. Given that rosiglitazone lacks a distinct clinical advantage over pioglitazone, continued use of rosiglitazone may not be justified." So there you have it. Avandia appears to be more dangerous than Actos. Before we leave the subject of these two medications, I'd like to tell you that you can find natural ways to help yourself and possibly get off your diabetes medications if you read my other book, *Diabetes without Drugs*.

And, of course, if your doctor tells you that you must take either Avandia or Actos, you can protect your heart yourself by taking drug mugger doses of vitamin B₁₂, coenzyme Q10, and folic acid.

The following list of drug muggers contains some very popular medications including birth control pills, steroids, anticonvulsants, and diabetes medicine.

Drug Muggers of Folate (Vitamin B₉)

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Hydrocodone and acetaminophen (Lortab, Lorcet, Vicodin)

Hydrocodone and aspirin (Lortab ASA, Alor)

Oxycodone and aspirin (Percodan)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Rolaids)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Bactrim, Septra)

Tetracycline (Sumycin)

Anticonvulsants

Carbamazepine (Carbatrol)

Ethosuximide (Zarontin)

Gabapentin (Neurontin)

Phenobarbital (Solfoton)

Phenytoin (Phenytek, Dilantin)

Primidone (Mysoline)

Valproic acid (Depakene, Depakote)

Anti-inflammatory drugs

Celecoxib (Celebrex)

Diclofenac (Voltaren)

Etodolac (Lodine)

Ibuprofen (Motrin, Advil)

Indomethacin (Indocin)

Ketoprofen (Orudis)

Lodine (Etodolac)

Naproxen (Aleve, Anaprox, Naprosyn)

Nabumetone (Relafen)

Piroxicam (Feldene)

Sulfasalazine (Azulfidine)

Sulindac (Clinoril)

Antimetabolites (for Psoriasis)

Methotrexate (Rheumatrex, Trexall)

Antivirals

Delavirdine (Rescriptor)
Foscarnet (Foscavir)
Lamivudine (Epivir)
Nevirapine (Viramune)
Zidovudine, AZT (Retrovir)
Zidovudine and didanosine (Combivir)

Barbiturates

Amobarbital (Amytal)
Butalbital (Fiorinal, Fioricet, Zebutal)
Pentobarbital (Nembutal)
Secobarbital (Seconal)
Secobarbital and Amobarbital (Tuinal)
Thiopental (Pentothal)

Blood Pressure Drugs

Diuretics, loop:

Bumetanide (Bumex)
Ethacrynic acid (Edecrin)
Furosemide (Lasix)

Diuretics, potassium-sparing:

Triamterene (Dyazide, Dyrenium, Maxzide)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Cholesterol Agents

Cholestyramine (Questran)

Corticosteroids

Betamethasone (Diprolene, Luxiq)

Dexamethasone (Decadron)

Fluvoxamine (Luvox)

Hydrocortisone (Cortef)

Methylprednisone (Medrol)

Prednisone (Prednisol)

Inhaled corticosteroid:

Fluticasone (Flonase)

Diabetes Medications

Glimepiride (Amaryl)

Glipizide (Glucotrol)

Glyburide (Diabeta, Glynase, Micronase)

Glyburide and metformin (Glucoavance)

Metformin (Fortamet, Glucophage, Glucophage XR, Glumetza, Riomet)

Metformin and sitagliptin (Janumet)

Pioglitazone (Actos)

Rosiglitazone (Avandia)

Tolazamide (Tolinase)

Hormone Replacement Therapy/Oral Contraceptives

Estrogen-containing drugs (hormone replacement therapy and birth control)

Estrogens, conjugated (Prempro, Premphase)

Levonorgestrel (found in many birth control pills)

Muscle Relaxant

Carisoprodol (Soma)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Salicylates

Aspirin (Bufferin, Bayer)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

SSRI Antidepressants

Prozac (fluoxetine), Zoloft (sertraline), Paxil (paroxetine)

Sulfonamides

MISC:

Alcohol

Estrogen Dominance

Folate: Put This on Your Plate

Romaine lettuce, spinach, asparagus, turnip greens, mustard greens, collard greens, broccoli, cauliflower, beets (boiled), lentils, pinto beans, black beans, chickpeas, summer squash, cucumbers, papaya, lima beans, strawberries, and flaxseed

An Absurdly Inexpensive Way to Feel Better

The B vitamins are interdependent. In other words, it's very easy to tip your Bs out of balance. If you take too much folic acid, you may become deficient in your other B vitamins. So

whenever you take a single B vitamin, it may be wise to also take a B complex so that the other Bs are on board.

For general health: 400–800 mcg once daily

Drug mugger dose: 400–800 mcg two or three times daily

Just So You Know

Folic acid is a synthetic form of folate that is made in the lab. Many experts say that it's just fine and that your body (and some stomach acid) will convert it to an active, usable form. But you can actually buy the active form found in nature and save your body the work. These active forms are actually the way we find folate in food. Names to look for include 5-methyltetrahydrofolate (5-MTHF), calcium folinate, and folinic acid.

Folate is eliminated from the urine like most B vitamins. That's why many people can take up to 5 mg (5,000 mcg) per day for a few months without any long-term ill effect. However, I do not recommend this type of dosing for more than 3 to 6 months. I think that this is a huge dose, and it will tilt your other B vitamins off-kilter. I realize that some doctors are folate happy and order 5 mg dosages like this (and even higher, sometimes up to 20 mg for people with tumors). But for the general public, 5 mg dosages given daily are just too high.

Cutting-edge research shows that the anticancer effects of folate backfire when you take too much and may even propel the growth of cancer. This paradox is what prompts me to tell you to keep your dosage appropriate to your specific needs. As I said, high doses of folic acid will tilt all of your B vitamins out of healthy ratios and contribute to a B₁₂ deficiency. This could cause all sorts of problems. Typically, you know you are getting too much folic acid if you develop nausea, flatulence, abdominal distension, or kidney stones.

Install a Nutrient Security System

Taking supplements of folic acid provides your body with the precursor for making 5-MTHF, which is important because 5-MTHF is the most biologically active form of this B vitamin. If you are one of those people who has difficulty converting folic acid to this active form, you can go ahead and take a supplement of 5-MTHF instead of folic acid. This active form of the nutrient has been proposed as a treatment for cardiovascular disease and advanced cancers, including breast, colon, and rectal cancers. To find out if you have trouble converting it, there's a pricey blood test you can take that assesses your genes. A cheaper way to determine your ability to make 5-MTHF is to just evaluate your homocysteine level. If it's high, you may be one of those people who can't activate it properly.

To install the tightest security system possible, take vitamin B₁₂ along with your 5-MTHF. Vitamin B₁₂ is a methyl donor just like 5-MTHF. The tag team of B₁₂ and folic acid helps support nervous system function, cardiovascular health, normal cell division, and gum health. It also offers protection against cancer.

What's in My Cupboard?

Folic Acid 800 mcg by Solaray: Each capsule provides 800 mcg of folic acid.

B Complex Phosphorylated by Metabolic Maintenance: This formula contains a full range of B vitamins, including folic acid, with 800 mcg per capsule. I like the combination of B vitamins in this formula because some of them are active and body ready. For example, the form of B₁₂ used in this formula is readily available to the body as methylcobalamin (versus cyanocobalamin, which is fine, but has to undergo conversion); the riboflavin 5'-phosphate (R5P) is also bioavailable immediately, versus its inactive form riboflavin (found in most dietary supplements). It's not that the precursor vitamins are bad; they are found in millions of high-quality products. Just so you understand, though, they (cyanocobalamin, riboflavin, folic acid, pyridoxine, and others) have to undergo conversion in your body in order to

become available to your cells. This brand provides the B vitamins to you in their body-ready forms—basically on a silver platter. While it's not necessary, it certainly is helpful to people who have malabsorption issues, digestive trouble (like celiac or Crohn's disease or irritable bowel syndrome), or low acid (a condition called hypochlorhydria).

5-MTHF by Thorne Research: 5-MTHF is the body-ready type of folic acid, which means you can take it up easily and use it along with B₁₂ to improve your cardiovascular and nervous systems. This company also produces an excellent form of B complex called **Basic B Complex** that provides a full range of all the vitamin Bs in their active, body-ready forms, including 200 mcg folinic acid and 200 mg 5-MTHF per capsule.

Glutathione and N-Acetylcysteine

Glutathione, a powerful antioxidant with a funny name, ranks high on my list as a powerful detoxifier. Like other antioxidants, glutathione (sometimes referred to as GSH) sweeps up dangerous free radicals, the naturally occurring molecules that damage the body. GSH helps boost the immune system and reduce your risk of cancer.

Think “liver” when you think of glutathione, because your liver cells need a lot of it on board to break down your breakfast of scrambled eggs, sausage, biscuits, and coffee, as well as all the other meals of the day. Realize that you pretty much use up your body’s stores of glutathione just for eating, never mind dealing with drug muggers and lifestyle choices, such as drinking alcohol, that further deplete it. Remember, the liver is your body’s filter for toxins. Without a finely tuned and well-functioning liver, you would die very quickly. Glutathione helps your liver do its job.

Glutathione is also needed for healthy joints and cartilage, so I find it paradoxical that acetaminophen (the generic name for Tylenol) depletes this nutrient, as it is often used for joint pain. Acetaminophen is sold over the counter in the United States and overseas (where it is called paracetamol).

I asked Walter Crinnion, ND, one of the world’s leading experts in environmental medicine and author of *Clean, Green and Lean*, about glutathione’s role in helping to keep our bodies running efficiently. He explained how important this nutrient is and why it might help you: “Glutathione can help remove harmful toxins other than heavy metals, such as pesticides and dry-cleaning solvents, transforming them in such a way that the body can excrete them more easily. This becomes very important for people who suffer with neurological disorders, such as multiple sclerosis or Parkinson’s, sometimes thought to be connected to heavy metal toxicity or solvent poisoning from childhood.”

With the rise of these diseases, I think that keeping glutathione levels high is crucial to your health.

The nutrient glutathione has a hard time getting into your cells because it's so big and bulky. It doesn't fit through the doorway, the cell membrane. Because glutathione is so large and hard to assimilate, taking it as a stand-alone supplement isn't normally my recommendation, although it's safe to do so if you wish to. I'd prefer that your cells be given the right elements to make their own glutathione. Think of it as a recipe. You don't start out with a cake; you have to mix up all the ingredients, and the magic happens in the oven. It's the same concept with glutathione. You need to cook it in your cells, so to speak. It's far more effective for you to take the precursor nutrients that go easily through your cells' doorways. Once inside, they happily join together and create glutathione right where you want it.

The recipe for creating glutathione calls for a good B complex formula, because B complex supplies important B vitamins such as B₆, B₁₂, niacin, and riboflavin, which you need to drive the reaction. You also need three amino acids. I've listed them here along with their primary benefits to your body.

L-glycine: Protects the prostate gland and helps build muscles

L-glutamine: Helps digestion and the immune system

L-cysteine: Detoxifies the body while protecting the liver

These three important amino acids (and many others) are found in protein powders that are available at health food stores nationwide. There are so many types of protein mixes that it's almost dizzying to shop for one of them. I prefer protein powders in this order: hemp, rice, whey, and egg. I like hemp the best because it's a protein that is derived from a vegetable, and it contains a great deal of omega-3 fatty acids per serving. Hemp seeds are considered a superfood, so protein derived from hemp (which, by the way, does not cause a buzz like marijuana) is incredibly healthful. It's quite possibly the single most important health supplement you can

take on a daily basis. Hemp protein gives you large amounts of zinc, iron, and magnesium, three minerals you need for healthy mood, energy production, and blood sugar control.

Rice, whey, and egg protein supplements are also available, and all these products come in different flavors, like vanilla and chocolate. Don't worry that much about the taste, though. Concern yourself with the fact that these supplements are a quick and easy way to get all the glutathione precursors you need. That is the gift that they offer. You can always throw a scoop into the blender and mix it up with some fruit and water for a delicious pick-me-up that also helps build muscle. I drink protein shakes right before I go to Zumba dance class, so I have all the items on board to build muscle and feel energetic.

While shopping for a protein supplement, you will quickly see that the most popular is whey. This animal-derived protein is a good source of glutathione precursors. Some people feel well and do well on the dosages recommended on the label, but others who have higher requirements for glutathione (because of heavy metal toxicity or intensive workout sessions) need more than recommended. They might need four scoops instead of one or two per day. Don't make this decision on your own, please; consult with your health-care provider about the right dose for you.

Why the concern? Not only does doubling the amount exceed label directions for commercial products, but whey protein also is animal-derived, and high amounts of animal proteins (even from steak) can raise your uric acid levels, a condition known as hyperuricemia that is associated with kidney stones and gout. Big meat eaters and bodybuilders who take too much whey may have to deal with these problems. The condition happens when a collection of uric acid crystals settles somewhere. With gout, they generally wind up in the joints of your toes or fingers and can cause a great deal of pain. When this happens in the kidney, it can cause kidney stones.

So should you take a vegetable-derived protein supplement such as hemp or rice instead? Go ahead if you want to. But variety is also fine with me. You can alternate your protein

supplements from day to day or month to month. I've taken whey myself over the years, but I alternate my protein supplement. The best kinds of whey supplements are those that say "undenatured." This means that the protein has not been destroyed and all the ingredients are still active. Whey protein that has been exposed to high heat in the manufacturing process will not increase your glutathione levels, so stick with those products that are produced with high pressure instead of high heat.

The three amino acids I mentioned above—L-glycine, L-glutamine, and L-cysteine—are present in very small amounts in all the protein options I've mentioned. They each have an important role to play in the body. Protein supplements are a rich source of all the amino acids you need, so you don't have to take supplements of each one, although you certainly could. I believe that protein supplements are the fastest way to drive up your glutathione levels. Of the trio, L-cysteine is by far the most important, which is why it is often sold as a stand-alone supplement for increasing glutathione. In fact, it's very easy to buy supplements of cysteine or its derivatives at any health food store.

In particular, one stable commercial derivative of cysteine known as N-acetylcysteine (NAC) is sold as a stand-alone supplement at most health food stores. NAC undergoes a couple of chemical reactions to help you make reduced glutathione in your body—"reduced" means that the glutathione is active, and that's what you want. Many holistic doctors recommend that their patients take NAC for the express purpose of building up levels of glutathione because this nutrient is so important in detoxifying our bodies of dangerous toxins, used-up drugs and hormones, and some heavy metals. Doctors recommend NAC because glutathione itself is too bulky to get into the cells. NAC slips right in.

NAC (and obviously its offspring glutathione) can help you deal with respiratory problems, emphysema, congestive heart failure, HIV, epilepsy, heart disease, and heavy metal toxicity. It also seems to help smokers in their quest to quit.

People who have eye problems resulting from the autoimmune condition called Sjögren's syndrome may also benefit from glutathione. This was shown in one double-blind, placebo-controlled study using dosages of 200 mg three times per day.

Caution: If you have diabetes, you need to be aware that NAC can help to lower blood sugar. This is a good thing, but if you happen to take medication or insulin shots to keep your blood sugar tightly controlled, then NAC may alter the amount of medication you need. I recommend careful blood sugar monitoring if you opt to take this supplement. Your doctor can make appropriate changes to your medications should it become necessary.

You should also be aware that NAC, like the protein supplements discussed above, may spark the formation of kidney stones. You'll need to take about two or three times as much vitamin C as NAC. The added vitamin C helps minimize the formation of stones. NAC helps you to get rid of your body's load of toxic metals, such as mercury, lead, cadmium, and arsenic, but there is disagreement about whether NAC affects other minerals in the body. A few experts think that NAC can't distinguish between the dangerous metals and some of the essential ones such as copper and zinc, and they suggest taking a low-dose copper-and-zinc formula each day to counter the loss of these minerals. Most people, including me, take NAC without supplementing with copper and zinc and do just fine.

The combination of vitamin C and NAC is fantastic for many people. It has been shown to stop the spread of prostate cancer and lymphoma in animal studies. NAC and glutathione recycle other antioxidants in your body, giving them a second go-round. So if you take this supplement, instead of an antioxidant having just one chance to clean you up, it gets two or three chances. NAC and glutathione recycle vitamins C, A, and E, so they better protect you and therefore you have a lower risk of cancer. You might say that these nutrients do a great housekeeping job on your cells.

There is some debate about which is better: taking protein supplements, which provide the precursors to glutathione, or taking NAC. Dr. Crinnion weighed in on this for me: “NAC is much better for boosting glutathione levels than whey. It is both less expensive and faster at building up the levels. NAC boosts glutathione levels in the body quickly, and this helps the body to excrete more heavy metals. Most people are impressed when they learn that glutathione also helps the kidneys excrete methyl-mercury, which comes from fish. NAC is a great way to boost glutathione levels, and it doesn’t redistribute the heavy metals, it just takes them out of the body.”

Certainly glutathione can help you if you have any form of liver damage or infection. Besides loving your liver, the list of what glutathione can do goes on and on. If you have a serious condition that could benefit from glutathione (Parkinson’s, multiple sclerosis, amyotrophic lateral sclerosis [ALS, or Lou Gehrig’s disease], or heavy metal poisoning), you can ask your doctor for glutathione injections. They are given intravenously and take just a few minutes. Taking an oral supplement is cheaper and easier, but it’s good to know that the IV form is available for those who need it, and injectable forms are probably better utilized than oral forms.

Glutathione improves your sensitivity to circulating dopamine, a happy brain chemical, which explains why severely depressed people can increase their intake of whey protein and suddenly find their outlook on life more hopeful. Kids with autism may also benefit from glutathione.

In my opinion, glutathione, in tandem with other minerals and vitamins, can boost brain function and improve mood in a safer way than expensive pharmaceuticals. Our current arsenal of antidepressant drugs can cause an array of side effects, including aggression, insomnia, heart palpitations, and even thoughts of self-harm, so glutathione comes as a welcome relief. It can be taken along with medications, too.

The following list outlines drug muggers of glutathione, and it’s very short. I wish I could list the hundreds of medications that are processed by the liver. The liver uses glutathione to

metabolize all the medications you take and remove them from the body once their purpose has been served. Without glutathione, you simply wouldn't be able to clear drugs and toxins from your blood, so it's critical.

Let's take a look at the popular OTC painkiller acetaminophen as an example. If you have enough glutathione on board, your body renders the acetaminophen metabolite nontoxic and then excretes it. If you take too much acetaminophen, or too many other medications that the liver must process, it can overtax your body's store of glutathione. Do you see? If you can no longer metabolize the acetaminophen well enough, it (or its metabolites) becomes toxic to your cells. That can actually kill liver cells and prove fatal in sensitive people. I'm not exaggerating. It is interesting that doctors use NAC in the hospital to save the lives of acetaminophen-poisoning victims, usually kids. I once worked in a poison control center and saw this treatment used myself. Yep, NAC is *the* antidote to Tylenol poisoning because it rescues the liver.

Any medication, whether it's listed here or not, that goes through your liver can increase your requirements for this nutrient. If a med goes through your liver, it's taxing it, so you need a liver-loving nutrient like NAC or glutathione. In fact, anything that taxes your liver (smoking, coffee, alcohol, diet pills, herbal remedies, and so on) may cause you to need more glutathione, so consider a protein or NAC supplement to provide the amino acids that allow your body to make glutathione from scratch.

The following list is only a fraction of the hundreds of drugs that are processed (metabolized) by the liver. I haven't listed other drugs because there aren't any nutrient-depletion studies on those drugs.

Drug Muggers of Glutathione

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Acetaminophen and codeine (Tylenol 3)

Acetaminophen and paracetamol (Tylenol and others)

Butalbital-containing drugs (Fiorinal, Fioricet, Zebutal)

Hydrocodone and acetaminophen (Lortab, Norco, Vicodin)

Oxycodone and acetaminophen (Endocet, Percocet, Roxicet, Tylox)

Propoxyphene and acetaminophen (Darvocet)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Rolaids)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Sulfamethoxazole and trimethoprim (Bactrim Septra)
Tetracycline (Sumycin)

Antidepressants, Tricyclic

Clomipramine (Anafranil)
Desipramine (Norpramin) and others

Antivirals

Foscarnet (Foscavir)
Lamivudine (Epivir)
Zidovudine, AZT (Retrovir)
Zidovudine and Lamivudine (Combivir)

MISC:

Alcohol
Any drug mugger of thiamine
Any drug mugger of vitamin C (because C is needed to make glutathione)
Any medication that goes through the liver (there are hundreds)
Nicotine

Glutathione: Put This on Your Plate

Glutathione is manufactured inside the cells. Therefore, you have to eat foods that contain its precursor amino acids so that

your body can convert the amino acids into glutathione inside the cells. Protein supplements and foods containing amino acids are sources of these precursors. Foods rich in these amino acids include fruits, fish, meats, and whey. Good sources also include greens, chlorella algae, asparagus, broccoli, cabbage, brussels sprouts, cauliflower, kale, watermelon, avocados, walnuts, grapefruit, oranges, cantaloupes, acorn squash, peaches, zucchini, spinach, and eggs. It's also good to spice up with turmeric. Eating fresh, raw cilantro or parsley is a fantastic way of upping levels very quickly.

An Absurdly Inexpensive Way to Feel Better

For general health: NAC, 400–800 mg per day

Drug mugger dose: NAC, 600–1,200 mg per day

Chemotherapy: NAC, 1,800 mg per day to reduce nausea and vomiting. Check with your doctor.

Just So You Know

Protein powders (such as whey, rice, egg, and hemp protein mixes) are a quick way to boost glutathione levels. Take one scoop once or twice daily. The other way to get glutathione is to take NAC supplements. You know you are getting too much NAC if you start to get an upset stomach, heartburn, or increased appetite. If this happens, cut back on the dose. Be careful about getting too much NAC (or cysteine) because it is a gentle heavy metal chelator. This means that it has the capacity to pull out mercury, lead, cadmium, and cesium. If you do not have good digestive abilities and you are always constipated, these metals just get loosened up from various organs, combine with the cysteine, and get redeposited elsewhere. In other words, shaking up your metals without getting them out is not good for you, so first and foremost, fix your digestion. Like any good thing, you want to use NAC (and cysteine supplements) in moderation, and take the dosages suggested here or on your label.

Install a Nutrient Security System

The widely available herb milk thistle works hand in hand with glutathione. Detoxification occurs mostly in the liver, which has a big job on its hands. Milk thistle (or its active ingredient, silymarin) is known for its ability to protect the liver and enhance detoxification. It also can raise levels of glutathione in the liver, according to animal studies. Milk thistle and glutathione working together in the body form an amazing team, especially in terms of helping you rid yourself of unwanted chemicals, poisons, used-up drugs, and heavy metals. Talk about a tight security system!

What's in My Cupboard?

Cysteplus by Thorne Research: These capsules contain 500 mg N-acetylcysteine and will help protect the liver, support the immune system, and promote detoxification. Thorne products are free of magnesium stearate and all other additives.

Warrior Food by Warrior Power Nutritional (HealthForce): I love this product because it's a complete food that combines both sprouted organic rice and organic hemp protein, and it's also enhanced with organic phycocyanin extract from Klamath algae for kidney support and with enzymes like bromelain, papain, other proteases, lipase, and amylase, which help digestion and improve assimilation. It's vegan, raw, and gluten free. I love the texture and flavor of this food.

Certified Organic Hemp Pro Fiber by Manitoba Harvest: This is a hemp protein powder that is USDA-certified organic and cold milled. It contains all 10 essential amino acids, including glutathione precursors, as well as 400 mg omega-3 fatty acids and 11 grams of fiber per serving. It is sweetened with organic, fair trade cane juice, nothing artificial. It is free of soy, gluten, and preservatives.

Organic Hemp Protein by Nutiva: This is USDA-certified organic and easy to find at health food stores. It has a nice

flavor, a fine texture, and is great mixed in smoothies, water, juice, or hemp milk. It is free of all allergens.

Glutathione by Readisorb: In a patented process, the manufacturer places reduced glutathione into liposomes—liquid bubbles made from essential phospholipids, a beneficial form of fat. Wrapping the glutathione in fat helps ensure better bioavailability, making for a better chance that the bulky glutathione will actually slide into your body's cells, where it needs to go to do its job. The supplement smells like sulfur (all glutathione does), but tastes almost like water. I just drink it without inhaling. You only need a tiny amount, like a teaspoon.

Superberry by LivingFuel: This is an all-in-one concentrated, optimized whole meal superfood that delivers 300 mg of NAC in each serving along with excellent amounts of vitamins, minerals, proteins, essential fats, enzymes, coenzymes, herbs, botanical extracts, and soluble plant fiber. It's a convenient way to get the amino acids that form glutathione, and it also can improve your general health in many other ways. I like this product as a substitute for food when I'm in a hurry and don't have time to eat.

Immunocal by Immunotec: This form is made of bioactive whey protein from organic milk. It's lactose and fat free and delivers cysteine to your cells, where your body converts it to NAC and glutathione. You have to blend it with milk or juice—ideally orange juice so you get the added benefit of vitamin C. Use a whisk or Aerolatte hand blender, not a strong blender. It foams a little bit, and you can drink the foam. This product is useful for people with autoimmune disorders, depression, chronic fatigue, fibromyalgia, immune deficiency, and other problems. I buy mine online from numerous sources because it's not sold in stores.

NanoPro by BioPharma Scientific: This is natural whey protein that also contains colostrum extract, polypeptides, and reduced glutathione. The product is highly absorbable and tastes like a vanilla shake, even when mixed with water. I've taken this a lot because I like the taste so much. The company uses nanotechnology to get the particles to survive the harsh

environment in your stomach. Its rich polypeptides help balance the immune system and provide growth factors to support repair and regeneration. Contact information: www.biopharmasci.com or 877-772-4362.

Whey to Go by Solgar: Sold at health food stores nationwide, this whey protein powder is pure, easy to find, and very affordable.

Egg White Protein by Jay Robb: This protein supplement comes from egg whites, not whey, hemp, or rice. It tastes great and is free of casein, lactose, sugar, gluten, and artificial anything. It's sweetened with stevia. It is available unflavored or in chocolate, vanilla, and strawberry flavors. Contact information: www.JayRobb.com.

B Complex: I've already discussed the need for B vitamins if you are trying to make glutathione out of NAC. B vitamins work as a team, so it's a good idea to take them together in a single supplement. B complex is sold nationwide, it's easy to find, and there are many brands from which to choose. Look for capsules (because they're easier to absorb than tablets), and stick to dosages of around 50 mg (as in B complex 50). Take a B complex daily with your NAC, and it will help you "cook" glutathione in your cells.

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Iron

Iron is sold over the counter in supplement form, but it's a naturally occurring mineral found in many foods. Even though the World Health Organization considers iron deficiency the number one nutritional disorder in the world, I don't frequently recommend iron supplements for people complaining of fatigue because most US citizens have an adequate supply. Iron can be hard on the gut, causing nausea, cramping, and diarrhea or constipation. That said, if you have a blood test that shows that you are deficient in iron or if your doctor recommends an iron supplement, then by all means please take it.

Your body must have iron in order to make a protein called hemoglobin, which acts like a tow truck and lugs oxygen all over your body. It's amazing that humans can stash away some iron until it's needed again, so you might say it's recyclable. And speaking of going green, your stool can turn this color when you take iron supplements of any type. They can also simply darken, or even turn almost black. It's easy to overdo iron since it accumulates, making it particularly dangerous to tots. So if you do take an iron supplement, make sure to lock it up in your medicine cabinet.

In addition to fatigue, a number of other symptoms could signal an iron deficiency. For example, you may feel cranky, depressed, and have trouble concentrating. Pale skin and a pale or sore tongue are dead giveaways. You might have brittle nails or be prone to infections as a result of a weakened immune system. And your heart may beat like crazy upon very little exertion. Other conditions and nutritional deficiencies paint the same picture, so teasing out iron deficiency from other health issues is not always easy, but it's incredibly important if you ever want to build up your energy reserves.

Iron is so important to your energy level that without enough of this metal, you will develop hypothyroidism (low thyroid

hormone). So if you've been told that you have low thyroid, it may stem from an iron deficiency. You need adequate amounts of iron for your inactive precursor thyroid hormone (T₄) to be converted into your active, energizing thyroid hormone (T₃). Iron also helps carry T₃ across cell membranes so it can do its energy-producing job inside the cells. In fact, iron deficiency anemia is one commonly overlooked cause of hypothyroidism. It makes me sad that many people receive a prescription for Synthroid or Armour Thyroid that they need to take for the rest of their lives (and have to increase the dose over time) when what they really need is iron! It's important to note that you should not make a decision to switch from your prescription medication to an iron supplement on your own. You need appropriate testing and your doctor's expertise to determine whether you fall into this category.

Doctors utilize many tests to determine iron levels. Two fairly reliable ones are the serum ferritin and transferrin saturation ratio tests. If appropriate blood testing finds that you are legitimately deficient in iron, then this nutrient will breathe life back into you very quickly—in about 3 to 6 months. Please note, though, that some people can take iron supplements orally for many months and not respond, meaning their blood levels stay low or they still feel very tired or have hypothyroidism. This may be the result of undiagnosed leaky gut, which I'll explain momentarily.

By the way, if you must take both a prescription thyroid hormone and an iron supplement, do not take them together. Separate the iron from the thyroid by 4 to 6 hours, or they could cancel each other out. Drug interactions aren't the only situation that will cause you to not absorb the iron. It can occur for other reasons related to medical conditions, like low stomach acid or a leaky gut. Leaky gut is the term used when the intestinal lining becomes damaged and large openings develop in the gut wall as a result. Normally, the walls of the colon remain tightly sealed to protect you from reabsorbing waste that is about to get eliminated. Some of the toxic debris (such as undigested food particles and toxins) breaks through the walls of the gut, hence the syndrome is called leaky gut. It's not well recognized by conventional physicians; however,

the condition definitely exists, and having leaky gut may be the cause of hundreds of diseases because the toxins that leak through your gut can lodge in any organ of your body and cause symptoms. Most people understand that a gluten allergy results from wheat proteins that leak out of the gut; this is, perhaps, the most common example of damage done by a leaky gut. Also, the yeast known as *Candida albicans* is a common cause of leaky gut. This fungus is the cause of hundreds of diseases.

Finally, people who are allergic to milk may be allergic because the casein protein has found its way into their bloodstreams from their leaky guts! Are you getting the picture? Holes in your colon will cause you to leak out toxins that make mayhem in your body. Leaky gut syndrome prevents proper absorption of vitamins and minerals, iron included.

In my book, leaky gut is a known drug mugger for all sorts of nutrients because it causes malabsorption. Hypochlorhydria, or low stomach acid, will also cause iron deficiency. It's easy enough to test for low stomach acid; your doctor can order a blood test known as a gastrin test. If the test shows that you need acid, you can buy healthy digestive acids variously labeled trimethylglycine, betaine HCl, or betaine hydrochloride at any health food store. Follow the label directions closely to enjoy the benefits without getting heartburn. Testing for leaky gut can be done through either Genova Diagnostics or Metametrix Clinical Laboratory. (See information about these companies in Resources on page [327](#).)

Certain groups of people seem to run out of iron most easily. They include:

- Vegetarians
- People who have recently had surgery
- People who take drug muggers of iron
- Women who experience heavy periods
- People who have a minor perforation in the GI tract such as an ulcer that can cause a slow and steady leak of blood
- Pregnant women

- People with leaky gut, Crohn's disease, celiac disease, or irritable bowel syndrome
- People undergoing chelation therapy
- People with a riboflavin deficiency (see Chapter 19)
- People with kidney disease

You can see that there are a lot of people who can become iron deficient. When I interviewed oncologist John Lohrey, MD, a physician who has experience with patients suffering from anemia and who practices in Tulsa, Oklahoma, he had a lot to share with my readers. He makes this great point in regard to iron: "Anyone besides a menstruating female who is iron deficient should have a colonoscopy in order to rule out colon cancer. It doesn't matter if the stools don't show blood in them, as bleeding can be very slight or noncontinuous."

Having this test done could save your life because it could detect colon cancer early on. If a premenopausal woman finds blood in her stool, she should have a colonoscopy, too, according to Dr. Lohrey. "A less common place to lose blood is the genitourinary tract," he says. "Iron-deficient patients should also have a urinalysis to rule out blood in the urine as well."

People with kidney disease (especially if they are undergoing dialysis) tend to run out of iron because their kidneys are no longer able to create a hormone (erythropoietin) that forms red blood cells. People who drink a lot of dark grape juice or red wine also need additional iron.

Unless your doctor advises taking a supplement, you may be able to replenish your iron stores simply by eating iron-rich foods such as clams, oysters, mussels, liver, beans, lentils, and pumpkin seeds. And do drink some orange juice along with these foods, as the vitamin C bolsters iron absorption.

One more note of caution: There is a new theory on multiple sclerosis that suggests that iron accumulation in the brain causes lesions and symptoms. If you have MS, please watch my video on "The Liberation Treatment for MS and CCSVI," which is posted at www.youtube.com, and read my article "New Discovery: Liberation Treatment for Multiple

Sclerosis,” which is posted at my Web site, www.DearPharmacist.com. Iron supplementation in this group of people should perhaps be avoided.

Drug Muggers of Iron

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Analgesics

Butalbital-containing drugs (Fiorinal, Fioricet, Zebutal)
Carisoprodal and aspirin (Soma Compound)
Hydrocodone and aspirin (Lortab ASA, Alor 5/500)
Oxycodone and aspirin (Percodan)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Tums, Titalac, Rolaid)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Neomycin (found in some eyedrops, eardrops, and antibiotic ointments)
Sulfamethoxazole and trimethoprim (Bactrim Septra)
Tetracycline (Sumycin)

Anti-inflammatory drugs

(NSAIDs)
Celecoxib (Celebrex)
Diclofenac (Voltaren)
Ibuprofen (Motrin, Advil)
Indomethacin (Indocin)
Ketoprofen (Orudis)
Methocarbamol and aspirin (Robaxisal)
Naproxen (Aleve, Anaprox, Naprosyn)
Sulindac (Clinoril)

Antivirals

Delavirdine (Rescriptor)
Foscarnet (Foscavir)
Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Bisphosphonate Bone-Building Drugs (Iron can prevent their absorption, so an iron supplement should be taken 2 to 4 hours later.)

Alendronate (Fosamax)

Etidronate (Didronel)

Risedronate (Actonel)

Tiludronate (Skelid)

Blood Pressure Drugs

Methyldopa (Aldomet)

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Diuretics, potassium-sparing:

Amiloride (Midamor)

Spirolactone (Aldactone)

Triamterene (Dyazide, Dyrenium, Maxzide)

Diuretics, sulfonamide:

Indapamide (Lozol) This is a “sulfonamide” medication, and those types of drugs deplete iron; however, there is not a direct study for this medication and the depletion effect.

Chelating Agent

Penicillamine (Cuprimine)

Cholesterol Agents

Cholestyramine resin (Questran)

Colestipol (Colestid)

Parkinson's drugs

Levodopa (L-dopa or Larodopa)

Levodopa and carbidopa (Sinemet)

Levodopa, carbidopa, and entacapone (Stalevo)
(Stalevo has not been shown to deplete iron; however,
it contains levodopa as one of its ingredients.)

Salicylates

Aspirin (Bayer, Ecotrin, St. Joseph)

Aspirin and dipyridamole (Aggrenox)

Sulfonamides

Sulfa antibiotics, some diabetic medications

Thyroid Medicine

Armour Thyroid (Thyroid hormone)

Levothyroxine (Levoxyl, Synthroid, Unithroid)

MISC:

Alcohol

Allopurinol (not a drug mugger; it boosts absorption of
iron)

Coffee and tea (even decaf!) (It's okay to drink coffee
or tea, but separate the beverage from your iron
supplement by a couple of hours.)

Dairy products (These reduce absorption of iron
supplements.)

Excess zinc supplementation (zinc and iron have to
stay in balance, excess zinc inhibits iron uptake)

Hypochlorhydria (low levels of stomach acid)

Grape juice

Low ferritin levels

Red wine

Riboflavin muggers (See Chapter [19](#) on page [233](#))

Iron: Put This on Your Plate

Meat, poultry, and fish all contain iron in a form that's easy to absorb. Other sources include Swiss chard, spinach, thyme, turmeric, dill weed, cinnamon, parsley, rosemary, blackstrap molasses, mustard greens, turnip greens, green beans, shiitake mushrooms, asparagus, chickpeas, leeks, tofu, olives, lentils, kelp, and sesame seeds. Tea may reduce the absorption of iron from fruits and vegetables, so drink it 1 to 2 hours away from eating produce.

An Absurdly Inexpensive Way to Feel Better

For general health: Just eat iron-rich foods because excessive iron supplementation can backfire and turn into free radicals, which then have a toxic oxidative effect on tissues, especially the lining of your blood vessels. This is one of those moments when too much of a good thing turns bad, so unless you are known to be deficient in iron as measured by a serum ferritin blood test, don't supplement for longer than 3 months. Men need approximately 10 to 20 mg per day, whereas menstruating, pregnant, or lactating women tend to need more, approximately 20 to 30 mg per day.

Drug mugger dose: About 20–30 mg elemental iron each day for up to 3 months. Don't take your iron supplement within 2 hours of other minerals (like calcium or dairy products). It may take several weeks to months before optimal benefits are seen. A harmless discoloration of the stool often occurs, turning it dark green or black. This is normal and caused by iron that fails to get absorbed. Remember, the mineral itself is very dark.

Just So You Know

Don't take your iron with dairy products. Typical side effects of most iron supplements include stomach upset, gas, constipation (or diarrhea), heartburn, cramps, and nausea. These problems can be minimized or eliminated altogether by taking your supplement in the form of iron bisglycinate, iron

glycinate, or ferrous bisglycinate. These are chelated forms of iron, which means that amino acids are attached to the mineral. In these examples, two molecules of the amino acid glycine are bound to one molecule of iron. This unique form is absorbed through the intestinal tract like any other amino acid without the usual irritation and constipation that most forms of iron cause. This is why I often recommend taking minerals in chelated form. Generally, this type is taken up easily and causes fewer side effects.

The human body appears to have a built-in limit for chelated iron bisglycinate and won't take up more than you need. So you are also safer when you take iron bisglycinate. This is important since iron is toxic in large quantities and is one of the leading causes of poisoning and death in young children. In adults, excessive amounts can cause oxidative damage because it can form free radicals.

While various brands of iron bisglycinate may be found in many health food stores and doctors' offices, the average family physician or pharmacist may not have heard of it. There is plenty of research regarding its safety and efficacy available on the Internet, and I prefer this form myself, having taken iron on and off for more than a year. I noticed that my nails grew like crazy and became beautiful for the first time in my life.

It's ideal to take iron supplements on an empty stomach, but minerals are irritating to the gut, so if it upsets your stomach, take it with food. The bisglycinate form should not affect you, however. With any type of iron supplement, don't take it within 2 hours before or after consuming antacids, eggs, whole grain breads, milk, cereal, tea, or coffee. With most OTC brands of iron sold in pharmacies (i.e., ferrous sulfate, ferrous gluconate, ferrous fumarate, and others), it's relatively easy to get too much, unlike with iron bisglycinate. As noted earlier, you are safer with iron bisglycinate because it is nonconstipating and also because your body has a mechanism to keep you from absorbing too much. Nevertheless, I hardly ever recommend taking an iron supplement unless blood tests confirm that you are deficient and your symptoms support the test results.

There are a few instances in which supplementation is safe and advised, when the right amount can make a tremendous difference in your life. For example, if you are being mugged by a drug, if you are truly iron deficient, or if you are a regular blood donor or have heavy periods, then I feel it's okay to supplement with low doses for a short period of time. Remember, if you have children, be especially vigilant about your medicine cabinet because iron overdose is extremely dangerous to kids.

Install a Nutrient Security System

Although orange juice does not contain iron, it is considered helpful to drink a glass of orange juice each day to help boost the amount of iron your body absorbs; the vitamin C in OJ increases the absorption rate. Drinking OJ may not be enough for some individuals who need a real boost. If your doctor really wants you to drive the iron into your body, he or she may suggest vitamin C supplements instead of juice. In this case (and it's not for everyone), take about 200 mg of vitamin C along with your 20 to 30 mg elemental iron dose. I'm not recommending supplemental vitamin C for everyone, though, because it increases the side effects of iron, but if you are trying to install a tight security system, this is one way.

The other way is to take the supplement betaine hydrochloride or trimethylglycine (sold at health food stores) with your meals and your iron supplement. Take them all together. This supplement provides a little stomach acid. Many people today have low stomach acid (hypochlorhydria), so they don't absorb their iron well and they burp a lot after eating. This supplement improves digestion and iron absorption for most people.

There should be no side effects, but if you develop heartburn after doing this, you may not need the betaine after all. And if you take an acid blocker, naturally you'll want to avoid the acid these supplements provide. (That opens up another can of worms because many people who take acid blockers actually need acid. For more information about this, you'll have to read

my article “Heartburn? My Gut Feeling Is That You Need More Acid,” which is posted on my Web site.)

What’s in My Cupboard?

Iron 18 mg Capsules: Non Constipating Iron Bisglycinate by Bluebonnet: These are easy-to-swallow, small, tasteless capsules that provide elemental iron in the nonconstipating chelated form. You can find this product at health food stores.

Iron Glycinate by Xymogen: This brand is sold in doctors’ offices. It provides 29 mg of pharmaceutical-grade iron per capsule. You’ll have to ask your physician to order it for you.

Comfort Iron (Iron Bisglycinate) by Vitamin Shoppe: This product can be found at Vitamin Shoppes nationwide. It is called Comfort Iron because it is the iron bisglycinate form. Each veggie cap provides 25 mg elemental iron.

Easy Iron by Country Life: This is another easy-to-find brand of iron bisglycinate. Like the others, it is a pure form of bioavailable iron, so it’s easy on the tummy.

Ferrochel Iron with B Vitamins by Nutraceutical Sciences Institute (NSI): This brand of iron bisglycinate is sold at Vitacost.com. I like it because it also contains all the B vitamins—thiamine, riboflavin, niacin, folic acid, pyridoxine, and B₁₂ (as methylcobalamin). This product could be extremely helpful if you are anemic and stressed out, because the iron helps the anemia and the B vitamins help you cope by supporting your adrenal glands. Remember, the Bs are called stress vitamins for a reason. It’s a powerful combination. Contact information: www.vitacost.com.

Energizing Iron with Eleuthero by Enzymatic Therapy: This product contains a highly absorbable form of iron derived from beef liver, along with the right amounts of B₁₂ and trace minerals to help you absorb it. The herb eleuthero is great for energy. Even though this iron is animal derived, it’s absorbable and does not raise your cholesterol.

Polysaccharide Iron by Niferex, Nu-Iron, or a store brand: This form of iron is slightly better tolerated than

ferrous sulfate, and it's easy to find at pharmacies. If it's not in the vitamin aisle, ask the technician because sometimes these brands are kept behind the pharmacy counter. One capsule offers 150 mg polysaccharide iron complex. I like this brand, but it's not quite as digestible as the bisglycinate forms.

Spirulina Pacifica by Nutrex Hawaii: Spirulina is a blue-green alga that occurs naturally in the ocean, and it's one of those supplements I take every day because it is so energizing and detoxifying. This company is dedicated to production of spirulina, which many experts call a superfood. They offer both tasteless softgels and a powder that can be mixed in juice (because it has a unique flavor). Spirulina contains a lot of iron along with other minerals and proteins that work in a synergistic manner. To produce this product, the company uses pristine water that is dedicated to growing algae. It's going to give you iron and other minerals, but if you have severe iron deficiency anemia, it's also okay to take an iron bisglycinate supplement. You can check with your doctor.

Spirulina is believed to have anticancer effects, plus it acts as an antihistamine, antiviral, and anti-inflammatory agent. It protects against stroke, too. See why I take it every day?

Ocean's Alive Marine Phytoplankton by Sunfood: This is concentrated raw food containing phytoplankton straight from the ocean, and it will give you amazing nutritional benefits. The intense chlorophyll content detoxifies the body, neutralizes (chelates) heavy metals, sends fuel to the muscles, and increases energy, heart health, and mental clarity. Although it does not contain a large amount of iron, the combination of all the minerals together in their live forms is synergistic. I take a dropperful in water each day when I'm not taking spirulina. It's completely tasteless. You can do one or the other each day (spirulina or phytoplankton) to keep your system running in tip-top shape.

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Magnesium

Magnesium has to be one of my all-time favorite minerals because it has beneficial effects all over the body. Think of it as your chill pill because it makes you relax from your head down to your toes. Magnesium is important for a good mood, first and foremost, but most people don't realize it's also necessary for stabilizing blood pressure. Without enough magnesium, your blood pressure rises. You need the mineral to keep your heart beating in perfect rhythm and to keep your pancreas functioning optimally. Deficiencies of magnesium can lead to cardiac and blood sugar issues.

Western societies are short on magnesium in part as a result of soil depletion and the processing of food. I believe this is one reason why we are seeing so much heart disease, depression, and diabetes. Magnesium is not as chic as calcium. You don't see people wearing magnesium mustaches, do you? If you did, they'd be green, since magnesium is found in a lot of green foods, including seaweed, spinach, turnip greens, and spirulina. It would not be pretty.

I feel that magnesium is so important that without enough of it in your system, you will suffer more diseases in your lifetime and die sooner than if you had normal, healthy levels. Seriously, it's that important.

Magnesium deficiency can cause muscle weakness, tremor, and spasm. Your heart is a muscle. If you get a spasm or tremor in your heart, you're in trouble. In fact, magnesium deficiency can cause arrhythmias such as atrial fibrillation, irregular contraction, and rapid heart rate. Some studies show that magnesium also benefits people with asthma by preventing bronchospasm.

Magnesium is so protective of the brain that when you run low, you are more prone to migraines, insomnia, anxiety, phobias, brain fog, depression, and suicidal thoughts.

A deficiency of this mighty mineral could result in more frequent headaches, migraines, fasciculation (twitching), muscle pain, fibromyalgia, poor nail growth, and asthma. And if that's not bad enough, you could also develop leg cramps, tenderness all over your body, a weak heart, high blood pressure, and thicker, stickier blood.

Since magnesium is married to calcium and used to build bone, a magnesium deficiency could cause bone brittleness (osteoporosis), a condition more likely to occur in women. In fact, women have a particularly hard time of it when they run low on magnesium. In addition to osteoporosis, we see a lot more emotional instability and PMS symptoms such as tearfulness, cramps, mood swings, and irritability—even panic attacks.

Kids need magnesium for healthy brain function. Studies have shown that low magnesium can cause attention deficit problems. In fact, medical researchers have known about this effect for quite some time. One study done way back in 1997 found that 95 percent of kids with ADHD (attention-deficit/hyperactivity disorder) were deficient in magnesium. In 1987, another trial included 75 magnesium-deficient children with ADHD who were randomly assigned to receive either magnesium along with their standard treatment or just their standard treatment alone for 6 months. Those who received magnesium showed a significant improvement in personality and behavior, while the control group exhibited worsening behavior over the study period.

This explains why many natural supplements for ADHD contain magnesium. The mineral helps relax the brain and allow more focus.

This book is for adults, not children, so the doses I suggest throughout the book are adult doses. But it seems necessary to include appropriate daily children's doses here: For children 1 to 3 years old, 80 mg; for children 4 to 8, 130 mg; and for children 9 to 13, 240 mg. Make sure you let your child's pediatrician know about the supplement. If your child takes medication, you'll want to get the doctor's approval before starting.

I often recommend this mineral to people with depression (for mood stability), fibromyalgia (because it reduces muscle pain), and anger management problems and for aggressive personalities (for its calming effects). Make no mistake, if you are married to a Tasmanian devil who blows his or her fuse at the sight of dirty dishes, magnesium won't do a thing for it. It's really for people who want to chill out a bit more, stop being worrywarts, feel more content, or reduce the frequency of panic attacks.

Some experts think magnesium has a place in treating suicidal depression, and I happen to agree. Anyone with serious depression should, of course, be under a doctor's care. But do ask the doctor about adding a magnesium supplement to the treatment regimen. It goes without saying that it's a good bet for milder forms of depression as well. Many of my readers have taken magnesium for this reason with good results after reading a syndicated column that I wrote on the subject, "Natural Ways to Ease Depression and Reduce Anxiety." It is now posted on my Web site, www.DearPharmacist.com.

I've saved the best surprise of all for last: One bar of exceptionally dark chocolate contains about 300 mg of magnesium. I've drawn the conclusion that chocolate is not only good for your soul, it's also good for your brain! Sweet.

Drug Muggers of Magnesium

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Ranitidine (Zantac)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Rolaid)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Bactrim, Septra)

Tetracycline (Sumycin)

Antiviral Agents

Delavirdine (Rescriptor)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

Hydralazine (Apresoline)

ACE inhibitors:

Enalapril and HCTZ (Vaseretic)

Angiotensin II receptor blockers:

Valsartan and HCTZ (Diovan HCT)

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, thiazide (and any combination drug that contains HCTZ or hydrochlorothiazide—dozens of drugs contain this)

Candesartan and HCTZ (Atacand HCT)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Diuretics, potassium-sparing:

Possibly the potassium-sparing diuretics, however this is not conclusive

Diuretics, sulfonamide:

Indapamide (Lozol)

Cardiac Glycoside

Digoxin (Digitek, Lanoxicaps, Lanoxin)

Central Nervous System (CNS)

Stimulants

Methylphenidate (Metadate, Ritalin)

Cholesterol Agents

Cholestyramine (Questran)

Colestipol (Colestid)

Corticosteroids

Betamethasone (Diprolene, Luxiq)

Dexamethasone (Decadron)

Hydrocortisone (Cortef)

Methylprednisolone (Medrol)

Mometasone (Elocon)

Prednisolone (Pediapred Liquid)

Prednisone (Deltasone, Liquid Pred, Sterapred)

Triamcinolone (Aristocort cream)

Inhaled corticosteroids:

Flunisolide (Nasarel, Nasalide)

Futicasone (Flonase)

Triamcinolone (Azmacort inhaler)

Hormone Replacement Therapy/Oral Contraceptives

Diethylstilbestrol (DES)

Estradiol (Activella, Climara, Combipatch, Estrace, Estraderm, Estring, EstroGel, Femring, Menostar, and many others)

Estrogen-containing drugs (hormone replacement therapy and birth control)

Estrogens, conjugated (Premphase, Prempro)

Estrogens, esterified (Estratab)

Estropipate (Ogen)

Ethinyl estradiol (found in many birth control pills)

Levonorgstrel (found in many birth control pills)

Immunosuppressants

Cyclosporine (Sandimmune, Neoral)

Tacrolimus (Prograf)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Osteoporosis

Raloxifene (Evista)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides

Sulfa antibiotics, some diabetic medications

MISC:

Alcohol

Calcium supplementation (prolonged or in excess)

Coffee

Estrogen dominance

High cortisol levels

High-sugar diet (glucose, fructose, sucrose)

Malabsorption of any sort (celiac or Crohn's disease, pancreatitis, crash dieting, anorexia)

Mineral oil

Magnesium: Put This on Your Plate

Swiss chard, spinach, kelp, tofu, legumes, chocolate, baked potato with skin, oatmeal, whole grains, summer squash, turnip greens, pumpkin seeds, broccoli, halibut, flaxseeds, ginger, sunflower seeds, sesame seeds, quinoa, buckwheat, tomatoes, beets, brussels sprouts, scallops, yellowfin tuna, asparagus, crimini mushrooms, tempeh, brown rice, oats, lima beans.

An Absurdly Inexpensive Way to Feel Better

For general health: 100–200 mg once or twice daily

Drug mugger dose: 300–400 mg once or twice daily

Just So You Know

You should be aware that many physicians aren't yet using the best test for diagnosing an underlying magnesium deficiency. You could be having all kinds of problems related to low magnesium and still be told your levels are fine. Let me emphasize it here: *Magnesium level has to be measured in the red blood cells, not the blood serum.* Your doctor needs to know what your RBC magnesium level is, *not* your serum magnesium level. Otherwise you could have heart palpitations or scary arrhythmias, for example, that don't get diagnosed properly, and ultimately have a heart attack. So make sure your doctor measures your magnesium properly.

It may be a good idea to get about twice as much calcium as magnesium; however, the data are not clear on this. Some experts feel that it's best to consume a 1:1 ratio rather than a 2:1 ratio. Formulas are made with these ratios in mind, so you can always try a product and see how you feel. The best forms of magnesium are the amino acid chelate or glycinate forms, or any form bound to an amino acid such as aspartate, malate, and so on. When you read the label, you may see it designated as magnesium chelate, magnesium amino acid chelate, or magnesium glycinate. These forms are less likely to cause diarrhea. Many brands of magnesium sold at pharmacies are

magnesium oxide, but I don't recommend this kind because it is hard on the stomach and seems to cause diarrhea.

Another readily available form is concentrated liquid magnesium citrate. I know you've seen this type at the pharmacy. It comes in a bottle that lines the bottom shelf of the laxative aisle. This type of magnesium is used to relieve constipation. I promise you, this is not what you want! A few swigs of magnesium citrate from one of these bottles could elicit an explosive bowel movement whether you want one or not. Do not drink this before getting on the bus, please. Or a taxi, airplane, subway, or anywhere public! Reserve these drinks for required bowel evacuations, like right before your colonoscopy or other gastric procedure.

And do get naked with magnesium. Why not? I mean, take a bath with it, silly! I'm talking about Epsom salts, a product that contains a hefty helping of magnesium. Pour a cup of Epsom salts in hot bathwater and relax. Magnesium goes right through your skin because it's absorbed through your pores, or transdermally. If you recall, I said magnesium is very relaxing. It makes your muscle cells take a deep sigh of relief and release their tension. Add some soft music and candlelight and you have the perfect antidote to a long, hard day.

You should be aware that magnesium can accumulate in the body, especially if you have reduced liver or kidney function. And if you take too much, you may develop heart palpitations and arrhythmias. As a general rule, what's important is not how much magnesium you take, but the ratio of magnesium to the other minerals in your body, such as calcium, iron, potassium, selenium, and so on. Monitoring your mineral levels isn't that hard with SpectraCell Laboratories, Metametrix Clinical Labs, or Genova Diagnostics. (See page [327](#), Resources, for more information about these labs.)

People who have suppressed thyroid function or take lithium tend to develop an overload of magnesium more easily. You'll know you're getting too much if you develop nausea, appetite loss, diarrhea, drowsiness, weakness, irregular heartbeat, or very low blood pressure. Magnesium interacts with many medications and can make certain antibiotics (like tetracycline,

Cipro, and Levaquin) less effective, so avoid magnesium while on these medications and for 3 days thereafter.

Install a Nutrient Security System

One of the most common problems that people suffer with is intestinal yeast overgrowth with *Candida albicans*. This could cause difficulties in absorption of magnesium. It bothers me that most conventional physicians dismiss *C. albicans*, but in my book it is a common cause of mineral deficiency, especially magnesium. To install the best security system, eliminate sugary foods (which feed the *C. albicans*) and take healthy probiotics and yeasts (see Chapter 17 on page 221 for how to do that). Then, when you take a good brand of magnesium, your body will be better able to take it up so it can help soothe your muscles, nervous system, and cardiovascular system.

What's in My Cupboard?

Energy Boost 70 by Morningstar Minerals: This is a liquid product that contains easily digested and bioavailable organic mineral complexes. These minerals are all plant-derived “fulvic acid mineral complexes,” which may help your endocrine system, lower high blood pressure, and rebuild your immune system. It's tasteless and can be mixed with juice or water, plus it can be dosed according to your needs because it is a liquid. These minerals also improve metabolism, energy, and cellular repair. Contact information: www.msminerals.com or 866-898-4467.

Calcium Magnesium Citrate by Bluebonnet: This formula is great because each capsule comes complete with vitamin D and minerals in a highly bioavailable form. It integrates 1,000 IU of cholecalciferol (vitamin D) with 1,000 mg calcium citrate and 400 mg magnesium citrate aspartate.

Marine Minerals by Seagate: Each capsule contains 75 minerals, including magnesium, calcium, iodine, zinc, selenium, and copper. It is a pure seaweed- and fish-based form of minerals, mainly from sardines. It contains omega-3

essential fatty acids and all the marine minerals because it's derived from the ocean. You may not like sardines, but those critters are nature's own concentrator's of sea minerals. Contact information: www.seagateproducts.com or 1-888-505-4283.

Calcium and Magnesium Mineral Complex by Nature's Way: The combination of calcium and magnesium in this product is provided in various forms, allowing for enhanced absorption. Each capsule contains calcium and magnesium in a 2:1 ratio (500 mg calcium to 250 mg magnesium).

Aspartic-Mag by Nutri-West: This vegetarian tablet provides the body with a highly absorbable form of magnesium that is bound to aspartate. When it comes apart in the body, the aspartic portion works its way into the biochemical pathways to help you produce more energy, while the magnesium works on the cellular level. It's an intelligent combination. Each tablet supplies 70 mg of elemental magnesium (from 500 mg of magnesium aspartate) and 430 mg of L-aspartic acid. To buy a Nutri-West product, ask your physician to order it for you or look online. They are not sold in health food stores.

Spirulina by Nutrex-Hawaii: This spirulina provides more antioxidant power than five servings of fruits and vegetables. It contains magnesium, calcium, and all 94 trace elements to support your body with key nutrients. This can help with cholesterol, vision, energy, and infections.

Broad Spectrum Magnesium by Stephen Sinatra, MD/Advanced BioSolutions: Each capsule provides 100 mg of magnesium (as citrate, glycinate, orotate, and taurinate salts) and is very absorbable. Contact information: www.drstinatra.com.

High Absorption 100 Chelated Magnesium Mineral Supplement with BioPerine by Doctor's Best: This product is a chelated magnesium bound to two amino acids, glycine and lysine. The BioPerine (a black-pepper extract) helps it get into your cells. I like that it contains glycine, an efficient carrier for minerals through the intestinal tract. The body uses glycine to form collagen, a key protein in cartilage and

connective tissue. Lysine is an essential amino acid that assists gastric function. Each vegetarian tablet provides 100 mg elemental magnesium.

Magnesium Aspartate by Thorne Research: These vegetarian capsules provide magnesium intelligently, because it is bound to aspartate. When the compound comes apart in your body, the aspartic acid portion jumps into your Krebs cycle to help you make energy, while the magnesium goes to work on your muscles, nerves, and mood. Each capsule provides 90 mg.

Ultra Pure Magnesium Oil by Ancient Minerals: You spray this clear liquid onto your skin. It's a little tingly, but that is minor. The direct application allows the magnesium to enter directly into your bloodstream, bypassing your gut, which is good if you have malabsorption issues or a sensitive stomach. I've asked my massage therapist to spray a little of this on areas of pain, along with the massage oil, right after a particularly hard workout. Contact information: www.ancient-minerals.com.

Epsom salts: This product, which contains magnesium, goes right through the skin and into your body when you add it to your bathwater. It's not enough to give you a therapeutic level if you are deficient, but it's a nice aid. It is sold at pharmacies and health food stores.

Melatonin

Think of melatonin as nightfall in a pill. Melatonin is your sleep hormone, and it plays a pivotal role in both sleep and immune function. You make this hormone naturally; it is secreted by your pineal gland, which functions as your body's master clock. When night falls and it gets dark outside, melatonin leaks out of your pineal gland, your brain becomes flooded with the potent sleep hormone GABA (gamma-aminobutyric acid), and voila! You drift off to la-la land. Melatonin is thought to amplify the effects of GABA. When the sun rises, all the melatonin scurries away and you wake up. Even though it's not quite that simple, I think you get the gist.

Night-shift workers have to overcome the urge to sleep at nightfall and must reverse their sleep cycles. Many of them rely on melatonin supplements to help. When you take supplements of this hormone, you might say that you're taking nature's sleeping pill. Since melatonin helps you sleep, it gives your mind a mini vacation. This goes a long way in rejuvenating your body, healing your damaged cells, and refreshing your spirit for the next day.

Melatonin actually sets the biological rhythm of every cell in your body. It supports your immune system while you sleep by producing immune-boosting and anticancer substances that prevent infection and reduce signs of aging. Healthy adults usually secrete about 5 to 25 mcg of melatonin during the night, which is about 80 times less than is in the widely available 2 mg over-the-counter tablets. It doesn't take much. The problem is that when we get older, our melatonin level—like everything else—begins to decline.

This is why as you age you begin to awaken earlier and earlier. This is also why your 80-year-old mother-in-law phones you at 6:00 a.m. to remind you that she will be arriving for dinner at 5:00! (Sheesh, go back to sleep like the rest of the world, would ya?) Melatonin is secreted only while you sleep,

so the minute you open the fridge for that 2:00 a.m. ice cream binge, your melatonin production screeches to a halt. Melatonin is suppressed during daylight hours. This is one of the ways it helps with our natural sleep/wake cycle and biological rhythm. I recommend using a flashlight (instead of bright lights) for that 4:00 a.m. potty break, too, so your melatonin level doesn't drop so drastically, making it more difficult to go back to sleep. People with insomnia have lower levels of melatonin than good sleepers. And obviously teenagers have high levels of melatonin; my teens never crawled out of bed before noon.

Melatonin's most important role is to enhance production of youthful growth hormones. The antiaging benefits of this hormone occur with natural secretion, as well as with dietary supplementation. On the surface, this makes sense, right? Without adequate melatonin, you suffer from sleep deprivation, and everyone knows how bad that is for the body. But it goes much deeper than that.

Melatonin's ability to increase natural growth hormones in the body has been examined in several studies, and in one particular study, published in *Clinical Endocrinology* in 1993, melatonin administration produced an approximate twofold increase in levels of growth hormone in men. This makes sense to me; we all know that as we age, levels of melatonin and growth hormone decline, almost in sync with one another. Perhaps the reason is in part because the melatonin is responsible for the growth hormone release. And both of these hormones are known to scavenge free radicals, thereby protecting our cells and organs from damage and dysfunction.

Why is this such a big deal? Because when your growth hormone declines, you start to lose muscle mass, strength, energy, passion, skin tone, hair, hearing, and so forth. Your risk of disease increases too. As years go by, your age starts to show. So maintaining an adequate level of melatonin may help you maintain some youthfulness.

In other words, just because your kids think you are over the hill doesn't mean that you can't take melatonin supplements and cheat Father Time a little.

Now, if you're a young person who happens to take a drug mugger, melatonin depletion occurs—the same kind of depletion that aging people experience. Stress and all-nighters also make you run low on melatonin. Melatonin deficiency actually poses a bigger problem than missing a good night's sleep. This important hormone has anticancer properties because it is a very good antioxidant. Melatonin is especially important for protecting the DNA inside our cells against dangerous chemicals called peroxynitrites, which damage the cells' energy powerhouses (mitochondria) and kill cells. This will shock you, so I hope you're sitting down. Peroxynitrites are formed in the body from nitrites. Certain foods, namely cured meats, are high in these nitrites, which are added to protect their pink color. Cured meats have, in fact, been implicated in most neurological disorders, including Parkinson's disease, as well as chronic obstructive pulmonary disease, cancer, and diabetes. So if you like hot dogs, salami, and bologna, you are probably producing lots more peroxynitrites than you want to, and I'd recommend antioxidants for you (as well as a change in diet!). Can melatonin repair bologna damage? No, but melatonin does play a strong neuroprotective role in the body and suppresses the formation of dangerous peroxynitrites.

Studies show that women with low levels of this sleep hormone tend to have higher rates of breast cancer. According to some recent and well-designed trials, bringing in a melatonin supplement might halt the growth of breast cancer cells. One of these studies was published in the *International Journal of Cancer* in January 2006. Scientists found that melatonin acted like a weak aromatase inhibitor similar to a type of drug (Femara, Arimidex, Aromasin, or Evista) used to prevent or treat early breast cancer. Aromatase inhibitors act by controlling and slowing down the production of estrogen. Less estrogen equals slower tumor growth. Simply put, melatonin acted as a weak but effective antiestrogen.

One study was conducted at Harvard, where scientists evaluated 147 women with invasive breast cancer and 291 without cancer. Melatonin was measured using morning urine samples. What they found is incredibly important to women.

Basically, women who had the highest levels of melatonin had the lowest risk of cancer! Has your physician told you about this?

And this is also amazing: A meta-analysis that pooled data from 10 studies was conducted by scientists at McMaster University in Canada. The researchers examined data from studies on people who had solid tumors and looked at their survival rate after 1 year. They found that melatonin reduced the risk of death, regardless of the type of cancer, and there were no reported serious adverse effects.

All this doesn't surprise me, because melatonin regulates your hormones and seeks to balance them. I happen to think that what's good for Betty is also good for Bob in this case! Supplements that help with breast cancer can also help with prostate cancer because these cancers are often driven by the estrogen hormone. The prostate actually contains melatonin receptors, so melatonin is needed for a healthy prostate.

Back in 1998 a German study found that men with prostate cancer showed extremely low melatonin levels and therefore altered circadian rhythms, causing poor sleep. Circadian rhythm is the scientific name given to your internal body clock, which includes all the biological processes that regulate a 24-hour cycle. Both plants and animals have their own circadian rhythms. In people, this normal biorhythm can be disrupted by events like chronic illness, stress, grief, and traveling across time zones, just to name a few. There have, in fact, been many studies on laboratory animals showing that melatonin in varying doses could shrink the prostate and lower prostate weight. Melatonin has a place in the prevention and management of prostate tumors, not just mammary ones. I believe that melatonin may improve survival for some men, especially when the hormone is combined with other anticancer compounds or treatments.

Some of the best cancer-protective substances include medicinal mushrooms, antioxidants, B vitamins, minerals, and a diet rich in fresh organic herbs, vegetables, and fruits. I know you try hard to protect your precious cells from negative environmental and dietary influences. There is more on the

subject of hormones as they relate to cancer in my new *Breast Cancer Protection* e-book available on my Web site. You should also read the section in this book beginning on page 11 regarding menopause to find out what nutrients you need if you are taking a prescribed hormone drug.

Finally, it's worth mentioning that melatonin can be helpful in dealing with the discomforts of jet lag. Jet lag doesn't rank up there with the serious conditions just discussed, but many people fly internationally, and crossing six time zones, for example, is no picnic. It's hard for your body to adjust to the new hours of daylight and nightfall, which makes it difficult to conduct business meetings, give a lecture, or simply enjoy a vacation. Your body doesn't know whether to sleep or stay awake, because all of a sudden you're in bright daylight in a hustling, bustling city when your body thinks it's 4:00 a.m. and you are sleepy. Fortunately, melatonin is universally accepted as a safe remedy.

Simply take 2 to 5 mg at nighttime in the time zone you have arrived in. If you are still on the plane when nighttime occurs in the location to which you are headed, take the first dose while still in the air. How many nights should you take it? Divide the number of time zones you've crossed by half. For example, if you've crossed six time zones, take the melatonin each night for 3 nights. If the opposite occurs, that is, you land in broad daylight but it's 4:00 a.m. where you came from, I would skip the melatonin. Just check in at your hotel, take a catnap, and then wake up with the rest of the country, find a nice café, and get yourself a large mocha latte! The whole idea is to minimize the confusion in your body and quickly adapt to the time zone you're in.

Drug Muggers of Melatonin

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Aspirin (Bayer, Bufferin)

Ibuprofen (Advil, Motrin)

Naproxen (Aleve, Naprosyn)

Oxycodone (Oxycontin)

Hydrocodone-containing drugs (Vicodin, Lortab)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Roloids)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antianxiety Medications

Alprazolam (Xanax)

Clonazepam (Klonopin)

Diazepam (Valium)

Lorazepam (Ativan)

Triazolam (Halcion)

Antidepressants, Tricyclic

Desipramine (Norpramin, for example, is not a drug mugger, but it increases levels of melatonin.)

Antihistamine

Hydroxyzine (Atarax, Vistaril)

Antipsychotics

Chlorpromazine (Thorazine)

Fluphenazine (Prolixin)

Haloperidol (Haldol)

Thioridazine (Mellaril)

Blood Thinner

Warfarin (Coumadin) (Not a drug mugger; melatonin may potentiate the effect of this blood thinner, and too much blood-thinning increases the risk of bleeding.)

Blood Pressure Drugs

Adrenergic receptor agonist:

Methoxamine (Vasoxyl)

Beta-blockers:

Atenolol (Tenormin)

Bisoprolol (Cardicor, Zebeta, Ziac)

Carvedilol (Coreg)

Metoprolol (Lopressor and Toprol XL)

Nadolol (Corgard)

Propranolol (Inderal)

Sotalol (Betapace)

Calcium channel blockers:

Amlodipine (Norvasc)

Diltiazem (Cardizem)

Felodipine (Plendil)

Nifedipine (Procardia) This combination is not recommended. (Melatonin may reduce effectiveness of the drug.)

Nisoldipine (Sular)

Verapamil (Calan, Isoptin)

Centrally acting alpha-agonist hypotensive agents:

Clonidine (Catapres)

Cancer Drugs

Tamoxifen (Nolvadex) (Not a drug mugger, but the combination of melatonin with this breast cancer drug may enhance the effect.)

Inhibitory Hormones/Somatostatins

Octreotide (Sandostatin)

MAO Inhibitors

Phenelzine (Nardil)

Tranlycypromine (Parnate) and others increase melatonin levels.

Selective Serotonin Reuptake

Inhibitors (SSRIs)

Fluoxetine (Prozac)

Fluticasone (Flonase)

Fluvoxamine (Luvox) (Not a drug mugger; it increases melatonin levels.)

Sleep Medications

Eszopiclone (Lunesta)

Temazepam (Restoril)

Zaleplon (Sonata) and others

Zolpidem (Ambien)

MISC:

Alcohol

Any drug mugger of niacin, B₁, B₆, calcium, or magnesium because you need those nutrients to make melatonin.

Caffeine

Hypochlorhydria (because you need stomach acid to convert proteins in your food into key amino acids, which ultimately form melatonin)

Marijuana (Cannabis) (can increase levels of melatonin)

Niacin muggers

Nicotine (tobacco)

St. John's wort (can increase melatonin levels)

Smoking cessation patches, lozenges, or gum

Sunlight, lamps, fluorescent light

Vitamin B₆ muggers



Protection from Psychiatric

Medications

Psychiatric medications can cause a dreadful and usually irreversible side effect called tardive dyskinesia. It is usually seen with drugs that treat schizophrenia, but also sometimes with others. This side effect causes a person to perform involuntary, purposeless movements, such as tongue rolling, lip smacking, and grimacing, or wild movements of the arms and legs. One study suggests that melatonin supplements can reduce symptoms. This treatment is worth discussing with your doctor.

Melatonin: Put This on Your Plate

Oats, corn, rice, ginger, tomatoes, banana, barley, cherries, spirulina, seaweed, soybeans, chicken liver, pumpkin seeds, turkey, chicken, almonds, peanuts, brewer's yeast, and dairy products

An Absurdly Inexpensive Way to Feel Better

For general health: For insomnia, 0.5–1 mg at bedtime (may increase to 2 or 3 mg if no effect after 1 month)

Drug mugger dose: 1–3 mg at bedtime (ask your physician if 4 or 5 mg is okay if no effect after 1 month)

For cluster headaches: 6 mg at bedtime

For cancer or autoimmune disorders: Doctors suggest 5–20 mg per night (I am not recommending that you take it unless your doctor approves it. You can have your melatonin level assessed through urine or saliva testing)

Dose for jet lag: 2–5 mg at nighttime in your new location

Just So You Know

This is one of those rare instances when I prefer a synthetic brand to a natural one. Synthetic melatonin is better than natural melatonin because the natural type is extracted from cows' brains and some people are sensitive to proteins and potential viruses from the animals. Synthetic is cleaner in this case. That's what I take when I need it for jet lag.

Melatonin is not for everyone, though. Women who are trying to conceive a baby may want to give it a pass, as this hormone may hinder the ovulation process.

You may be getting too much melatonin if you have trouble rolling out of bed and fully waking up—sort of like a morning hangover. Excessive melatonin will also cause wild and crazy dreams that frighten you, increased daytime agitation, sweating, and heart palpitations. It might also suppress the level of estrogen or progesterone.

Some people have adrenal exhaustion (low levels of the hormone cortisol). As a result, they are constantly fatigued, feel faint when standing up, or have trouble coping with little annoyances. Taking melatonin in these cases can be harmful because it can further reduce cortisol levels. You can measure your hormone levels and get a good baseline level with a simple saliva test from ZRT Laboratory (www.zrtlab.com) or urine tests offered by Genova Diagnostics.

Install a Nutrient Security System

As a result of an age-related decline of melatonin, most older people respond to melatonin in a positive way because it increases their youthful growth hormones. One big benefit of melatonin is that it helps you fall asleep faster and stay asleep a little longer. If you could see the complex metabolic pathway on which melatonin is made, you would know that protein is important to that process. Most people get enough protein in their diets, unless they are vegetarian. If you are vegetarian or if you suspect that you don't get enough protein, consider protein supplements like whey, hemp, or rice protein and make yourself a shake every morning. See Chapter 10 on glutathione for more about these supplements. This is even more important: The B vitamins play an important role in the production of melatonin in the human body, particularly B₃ (niacin) and B₆ (pyridoxine). If you take a B complex supplement during the day and take your melatonin supplement at night, you can rest easy because you've installed the tightest security system possible. This is a good time to tell you that melatonin increases non-REM sleep, which can lead to vivid, bizarre, or frightening dreams. So one potential problem is that you just might create too tight a system by producing a little too much melatonin. If this happens to you, reduce your dosage of melatonin or stop taking it altogether for a few weeks. It's okay with me if you want to continue with your protein shakes and B complex, though.

What's in My Cupboard?

Melatonin (Sublingual) by Source Naturals: These 1 mg melatonin tablets are formulated to allow for a gradual release of the active ingredient over an approximate 6-hour period. This provides the body with more even absorption of melatonin through the night. Contact information: www.sourcenaturals.com.

Melatonin 500 mcg by Life Extension: This is a pure product containing a very small but physiologically

appropriate dose of melatonin. It is free of all allergens and preservatives. You take it 30 to 60 minutes before bedtime. This company also makes a 3 mg lozenge, which you dissolve in your mouth at bedtime.

Melatonin Forte with L-Theanine by Vitaline: This is a natural sleep aid that combines melatonin with the amino acid theanine, the relaxing chemical found in green tea. Each tablet delivers 3 mg melatonin and 40 mg theanine.

Melatonin 3 mg by Nature's Bounty: Affordable and easy to find, each tablet delivers 3 mg melatonin.

Melatonin 3 by GNC: Each tablet delivers 3 mg melatonin plus vitamin B₆ to help it work faster. It is free of all allergens, gluten, and artificial chemicals.

Melatonin 3 mg by KAL: This 100 percent pure vegetarian form of melatonin offers a 2- to 4-hour sustained-release action. This brand is easy to find at health food stores nationwide.

Melatonin Caps by Twinlab: This easy-to-find supplement contains 3 mg melatonin delivered to the body over the course of a few hours. It's an easy-to-swallow capsule, and just as with all Twinlab formulas, quality control is assured.

Melatonin by Source Naturals: This company produces three strengths, 1 mg, 2 mg, and 3 mg, and they are timed-release formulas, so they should have a longer action in the body. This product is sold at health food stores.

Melatonin 1 mg Liquid by Natrol: This comes with a dropper so you can gauge your dosage and adjust it up or down as needed. You take it 20 minutes before bedtime and combine it with water or juice. The product is naturally sweetened with raspberry and vanilla flavors.

Methylcobalamin (Vitamin B₁₂)

Vitamin B₁₂ is important for energy, sleep, and your nervous system. In fact, vitamin B₁₂ has so many virtues that I can't wait to get to all the good stuff—the stuff that will really help people suffering from autoimmune conditions and serious health problems.

But first, a brief history lesson: The complete molecular structure for B₁₂ wasn't discovered until the 1960s. Way back in the 1930s, scientists knew that a substance could help people with pernicious anemia. Pernicious anemia causes damage to red blood cells and occurs when the body cannot properly absorb vitamin B₁₂ from the gastrointestinal tract. This can result from poor gut health, from taking drug muggers, from having certain infections, or from a lack of intestinal flora (probiotics). People who have pernicious anemia feel tired, short of breath, confused, and off balance. To this day, vitamin B₁₂ is still recommended for this purpose, and what's so lovely is that many forms of B₁₂ are available over the counter.

Vitamin B₁₂ is water soluble and naturally present in some foods. It's added to other foods. It's available as a dietary supplement as well as a prescription medication given by intramuscular injection. No matter what the form, vitamin B₁₂ contains the mineral cobalt, so any naturally occurring compounds with vitamin B₁₂ activity are collectively called cobalamins. Methylcobalamin and adenosylcobalamin are the two primary active forms of natural vitamin B₁₂. There is a synthetic version called cyanocobalamin that is used widely in foods and dietary supplements sold in health food stores. Cyanocobalamin has to be converted by the body to methylcobalamin before it can be utilized.

One of the most intriguing facts about B₁₂ is that plants and animals can't manufacture it on their own. Most vitamins are made by plants or animals, but only microorganisms—yeasts, molds, algae, and bacteria—can make B₁₂. That's important for humans because our digestive tracts contain friendly yeast and bacteria that manufacture this vital nutrient. For that reason, true deficiency is rare, but a deficiency based on having a poor camp of healthy microorganisms in the gut is quite common. In any case, you seriously need to be getting sufficient vitamin B₁₂ for a number of reasons. For one thing, it helps you make red blood cells, and you need those for your very survival. A good store of red blood cells helps you create energy. Plus, red blood cells make up your blood!

One really cool thing about B₁₂ (specifically, methylcobalamin) is that it provokes faster release of the sleep hormone melatonin, so you can get to sleep easier. It also happens to sensitize you to waking up earlier by causing the melatonin to retreat as soon as light shines into your room. So this is a good vitamin if you have sleep problems, although it may not work for everyone. Melatonin regulates sleep, and many older people who run out of B₁₂ have trouble sleeping. You could be sleeping poorly because you are short on B₁₂. If you take a drug mugger for B₁₂, you could end up suffering with insomnia because, again, B₁₂ provokes the release of your melatonin sleep hormone.

To treat insomnia, doctors generally prescribe conventional (and usually addictive) sleeping pills. Before you say yes to them, it's worth giving a vitamin B₁₂ supplement a try and adding in a little melatonin as well. (See Chapter 13 on melatonin on page 175 for more information about supplementing with this hormone.) I'm so happy to share that secret with you! You'll likely get your doctor's blessing on this approach. Studies have even shown that B₁₂ supplementation not only helps people with sleep disorders get to sleep, but also improves the quality of their sleep and allows them to wake up feeling more refreshed.

Now the good stuff that I promised you at the beginning of the chapter. I'm going to focus on autoimmune conditions. If you have any sort of pins-and-needles sensations, numbness, nerve pain, or neuralgia (including trigeminal neuralgia), I want you to pay especially close attention right now.

If you have a history of autoimmune disease, rheumatoid arthritis, diabetic neuropathy, multiple sclerosis (MS), amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease), or chronic neuralgia, then getting enough vitamin B₁₂ is crucial for you, particularly methylcobalamin. These conditions are so hard to treat and so disabling that I'm delighted to tell you about this secret little B vitamin that I believe can help you.

Let's focus on multiple sclerosis first. Some physicians realize that stress, nutritional deficiency, and exposure to solvents, pesticides, mercury, and other heavy metals play a role in MS and neurological disabilities. In people who have MS, the thin coating around the nerve fibers, known as the myelin sheath, starts to unravel and deteriorate. This process, called demyelination, strips away the protection the nerve fibers need and worsens over time. Understandably, the nerves become extremely sensitive. Imagine an electrical wire that has lost its insulation and outer coating. This is why people with demyelination disorders have chronic pain, numbness, tingling, burning, muscle cramps, and other weird sensations.

There are many theories about why the myelin breaks down. One possible reason that I believe is worth paying attention to is wheat protein (gluten) allergy, the autoimmune version of the disease called celiac disease. I think people with MS should stay away from gluten just as a safety measure. That means no more pizza, bagels, and a bunch of other goodies unless they are baked with gluten-free flours. It's worth paying that price, in my opinion. It's not that hard to go gluten free, and I've posted some information on my Web site, www.DearPharmacist.com, to help you. Studies show that when people with MS go on gluten-free diets, they often improve. I found an article published in *Neurologia* in 2009 that discussed remission in an MS patient who went on a

gluten-free diet. While studies conflict, there are many experts who connect autoimmune disorders to gluten allergy.

Anyway, if your myelin sheath deteriorates, you start to feel pain, tingling, numbness, burning sensations, and so on. You may even be diagnosed with MS or another serious neurodegenerative condition. B₁₂ can help you repair it.

That's a hefty statement if you are one of those people who happen to suffer the painful consequences of myelin degeneration, so I am going to elaborate. I will refer to both methylcobalamin and methyl B₁₂, which are the same thing, because you see it referred to both ways if you search studies in the literature. You can skip the science if you want to. I'm including it so that you know just how important B₁₂ is if you have MS. Bear with me here.

The subject of myelin sheath degeneration could fill a book, and by no means do I mean to oversimplify this painful condition. Methyl B₁₂ works hard in the body to reduce the amount of a pain-causing (and myelin-destroying) compound called methylmalonic acid.

Experts widely accept that the condition is an autoimmune process in which the white blood cells attack the myelin sheath. Methylcobalamin donates methyl groups to the myelin sheath that insulate nerve fibers and regenerate damaged neurons. But it goes much deeper than that, because methyl groups are not the only things that methyl B₁₂ offers your myelin.

If you consume too much of an excitatory chemical called glutamate (yes, you get that from the MSG in thousands of food products), your nerve cells die. Methylcobalamin has been shown (you could even say proven!) to protect against glutamate-induced excitotoxic neuronal damage.

The cells most often affected by a B₁₂ deficiency are called astrocytes and microglial cells. These are very interesting cells because they are highly reactive and can amplify immune mechanisms throughout the central nervous system, meaning that if it's a good reaction, these cells break out their

megaphones and tell the rest of the body, and if it's a bad reaction, likewise. Trillions of cells in your body hear whatever these cells are saying. These astrocytes and microglial cells also help to clear glutamate, and without proper clearance the excess glutamate damages myelin. We always want to make nice with these cells and try our best to avoid irritating them. When we run out of B₁₂, we irritate them.

There is a strong correlation between B₁₂ deficiency and damage in the central nervous system because the deficiency sparks an inflammatory response and allows excessive glutamate to stay where it is. According to researchers at the University of Milan, animal studies suggest that the process goes something like this (and I've just cut to the chase here for reading ease):

A person becomes severely deficient in vitamin B₁₂. Chemicals called cytokines are produced in greater amounts in the cerebrospinal fluid. These cytokines then attack and destroy the fragile myelin sheath. These myelinotoxic cytokines include TNF-alpha (tumor necrosis factor-alpha) and sCD40, another chemical related to TNF-alpha. Boom! Lesions form on the myelin, or it may start to unravel or decay. With continued production of inflammatory chemicals, this process progresses and sclerosis (scarring) occurs and the degeneration may spread along the spinal cord.

As if that's not bad enough, this animal study also showed that the good stuff that helps myelin form was not being produced in high enough quantities. The researchers found a reduced synthesis of two neurotrophic agents, interleukin-6 and EGF (epidermal growth factor). This imbalance was also a result of cobalamin deficiency. Remember, B₁₂ is a cobalamin. It's methylcobalamin, to be exact.

The bottom line here is that you should never underestimate simple remedies. Our nerves don't start to hurt because we suddenly run low on Vicodin or Lyrica (although these meds may be incredibly helpful and necessary at times). My point is that our nerves hurt because of neuro-chemical imbalances

that trigger inflammatory chemicals. Vitamin B₁₂ plays an important role in improving the metabolic pathways that form your myelin.

Some of the research I've been elaborating on was published in *Progress in Neurobiology* in 2009. The researchers made it clear that a deficiency of B12 leads to an increase in toxic chemicals that damage myelin. High levels of pain-causing chemicals and low levels of healthy growth factors were confirmed in people with severe B₁₂ deficiency.

I've actually saved the best for last. In a 2005 study published in the *Journal of the Neurological Sciences*, Israeli researchers stated it best when they said this: "Multiple sclerosis and vitamin B₁₂ deficiency share common inflammatory and neurodegenerative pathophysiological characteristics. Due to similarities in the clinical presentations and MRI findings, the differential diagnosis between vitamin B₁₂ deficiency and MS may be difficult. Additionally, low or decreased levels of vitamin B₁₂ have been demonstrated in MS patients. Moreover, recent studies suggest that vitamin B₁₂, in addition to its known role as a co-factor in myelin formation, has important immunomodulatory and neurotrophic effects. These observations raise the questions of possible causal relationship between the two disorders, and suggest further studies of the need [for] close monitoring of vitamin B₁₂ levels as well as the potential requirement for supplementation of vitamin B₁₂ alone or in combination with the immunotherapies for MS patients."

Aren't you glad you learned that? Now you have the knowledge to protect your precious nerve fibers. And B₁₂ won't interact with any of your medications either. It's as natural to you as green is to plants! Physicians often prescribe antiseizure medications, narcotic pain relievers, and interferon to treat neurological disorders, neuralgia, and nerve pain. But in my book nothing is wrong with adding vitamin B₁₂ (specifically, methylcobalamin) to help you rebuild the coating around your nerves.

Many doctors still say that it's impossible to regenerate human nerve cells and improve painful neuropathies associated with myelin degeneration. Yet a study in the *Journal of the Neurological Sciences* published way back in 1994 found that methylcobalamin could trigger nerve regeneration in lab rats.

And back in 1983 a study published in the Russian journal *Farmakologiya i Toksikologiya* showed that the daily administration of methylcobalamin to rats markedly activated the regeneration of mechanically damaged neurons. Finally, two studies published in 1976 in the Japanese journal *Nippon Yakurigaku Zasshi* showed that B12 administration resulted in greater protein synthesis and neural regeneration.

Okay, I'm done with the studies for now. That was a lot of science to absorb, but it was important to include it here because so many doctors maintain that vitamins will not help something like MS. Given that these studies showing otherwise are out there, and that vitamin B₁₂ is safe, it makes sense to make this nutrient a part of the treatment plan for MS.

I also think it can help people with trigeminal neuralgia, shingles, neuropathies, problems with visual accommodation, neurological disorders, painful mouth sores, memory loss, and other autoimmune diseases (besides MS) in which demyelination is the underlying problem. Cyanocobalamin won't help these conditions to the extent that methylcobalamin will, so if you are going to supplement, use the superior form.

Vitamin B₁₂ is also useful in preventing heart disease. In Chapter 9 on vitamin B₉, or folate, I discussed how B₉ helps reduce homocysteine, an inflammatory substance that contributes to heart attack risk. B₁₂ also reduces the homocysteine level, but only in the methyl form. These two Bs work better together to lower homocysteine.

I've also seen vitamin B₁₂ supplements cure depression and memory loss. B₁₂ deficiency can cause symptoms that look exactly like Alzheimer's disease, primarily because the deficiency affects those astrocytes and microglial cells I told you about earlier. These cells get upset and create all those

inflammatory chemicals that damage the cells in the brain that are responsible for memory. I'm not saying that myelin breakdown is the cause of Alzheimer's, but it may contribute to it. Memory loss, fatigue, and mental confusion are usually the first signs of a vitamin B₁₂ deficiency.

This reminds me of a story my friend Bill Shafer told me. Bill was one of the primary anchors for WESH TV news in Orlando for many years. He's best known for his sense of humor and compassion. Now he and Marc Middleton head up a unique site for boomers, www.growingbolder.com. Since he's very articulate, I've decided to let him tell you the story himself. Take it away, Bill.

My 87-year-old mother-in-law suddenly started having delusions. Before we knew what hit us, we were told that she had Alzheimer's disease, and she was slammed into the mental ward of a psychiatric hospital for evaluation. Can you imagine how horrified and frightened she was?

My wife, Mary, was told to find a nursing home for her mother. Fortunately, she's a voracious Internet researcher and a Suzy Cohen disciple. Something didn't seem right. Mary saw that her mother's B₁₂ level was 202. Normal range is considered to be 200 to 900, but as we age, many believe, that number should be as close to the high end as possible. All of her doctors dismissed this lab value, then Mary found one who absolutely confirmed her suspicions. Her mother was prescribed daily, then weekly injections of methylcobalamin, and within a few short weeks her psychiatric symptoms and delusions completely disappeared. I'm happy to report that Mary's mom is back at home, healthy, happy, and loving life. All because of B₁₂.

When you run low on B₁₂, you feel tired and could even experience profound fatigue and weakness, especially in the arms and legs. You may become depressed, and you could develop tongue, mouth, or gum sores, as well as pale skin and lips. Other deficiency symptoms include low appetite, confusion, and forgetfulness. A B₁₂ shortage may also lead to

easy bruising and peripheral neuropathy, a feeling of vibration or buzzing in the legs, and a pins-and-needles sensation in your hands and feet, like little bee stings everywhere but not quite that intense.

Vegetarians and vegans may become deficient in B₁₂ because they do not eat meat, which is a source of B₁₂. Anyone who drinks alcohol, deals with prolonged stress, or has had gastrointestinal surgery, nerve pain, chronic fatigue, or digestive disorders could also benefit from additional B₁₂.

Many people run out of B₁₂ because they are taking drug muggers of this nutrient. Junk food and refined white sugar also strip your gut of essential components that you need to make or absorb B₁₂.

Drug Muggers of B₁₂ (Methylcobalamin)

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Tums, Titalac, Rolaid)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (just a few examples here, although there are many others)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Dicloxacillin (Dynapen)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Bactrim Septra)

Tetracycline (Sumycin)

Anticonvulsants

Phenobarbital (Solfoton)

Phenytoin (Dilantin) (Space supplement at least 2 hours away from anticonvulsant medication.)

Primidone (Mysoline)

Antigout

Colchicine (Colcrys)

Antimetabolites

Methotrexate (Rheumatrex, Trexall)

Antivirals

Foscarnet (Foscavir)

Lamivudine (Epivir)
Stavudine (Zerit)
Zidovudine, AZT (Retrovir)
Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

Methyldopa (Aldomet)

Cholesterol Medicine

Fibrate cholesterol medicine:

Clofibrate (Atromid-S)

Ezetimibe (Zetia)

Fenofibrate (Tricor)

Gemfibrozil (Lopid)

Bile acid sequestrant medicine:

Cholestyramine resin (Questran)

Colestipol (Colestid)

Colesevelam (Welchol)

Diabetes Medications

Glimepiride (Amaryl)

Glipizide (Glucotrol)

Glyburide (Diabeta, Glynase, Micronase)

Glyburide and metformin (Glucoavance)

Metformin (Fortamet, Glucophage, Glucophage XR,
Glumetza, Riomet)

Metformin and sitagliptin (Janumet)

Pioglitazone (Actos)

Rosiglitazone (Avandia)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Activella, Climara, CombiPatch, Estraderm,
Estring, EstroGel, Menostar, and many others)

Estrogen-containing drugs (Estrace, Femring)
Estrogens, conjugated (Prempro, Premphase)
Ethinyl estradiol (found in many birth control pills)
Norethindrone (Aygestin)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Parkinson's drugs

Levodopa/carbidopa (Sinemet)

Psychiatric Drugs

Chlorpromazine (Thorazine)

Fluphenazine (Prolixin)

Haloperidol (Haldol)

Thioridazine (Mellaril)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

MISC:

Alcohol

Any drug mugger of beneficial bacteria

Estrogen dominance Hypochlorhydria (low stomach acid)

Infection with *H. pylori* bacteria

Potassium supplements and drugs (Micro-K, Slow-K)

Vegetarian or vegan diet

Vitamin B₁₂: Put This on Your Plate

Primarily animal foods: beef liver, liverwurst, snapper, venison, shrimp (cooked), scallops, salmon, beef, lamb, cod, oysters, sardines, clams, flounder, halibut, yogurt, cow's milk, blue cheese, and eggs. Other sources: spirulina, brewer's yeast, tempeh, miso, and tofu.

An Absurdly Inexpensive Way to Feel Better

For general health: 250–500 mcg per day

Drug mugger dose and vegetarians: 1,000–5,000 mcg methylcobalamin per day (reduce dose after 1 or 2 months), along with a B complex to give you the full range of benefits. You can take the supplement orally or under the tongue (sublingually). You can also get injections to be administered by yourself or by a nurse.

Just So You Know

Methylcobalamin is the best form of the supplement. This is also called the *methylated form* of B₁₂. It's the active form that makes its way into the brain and nervous system, so it helps all kinds of neurological conditions.

Many people looking for B₁₂ make the mistake of buying cyanocobalamin, which is not natural. It's a semisynthetic version of the real deal. It's generally considered to be safe, and it's found in hundreds of supplements worldwide. As its name suggests, cyanocobalamin has a water-soluble cyanide group attached to its chemical structure, whereas methylcobalamin carries a methyl group. This is a very important distinction. The body's natural stash of B₁₂ is in the adenosylcobalamin form, not the methyl or cyano forms. The methyl in methyl B₁₂ helps lower homocysteine, an inflammatory chemical in the body that raises your risk of heart disease. Also, methyl B₁₂ is the only form that can help you generate an important antidepressant and pain-relieving chemical called S-adenosyl-L-methionine).

Remember I told you that people with low B₁₂ look like they have Alzheimer's? Well, a study published in January 2010 found that people with Alzheimer's have low levels of SAME in their brains. You can buy supplements of SAME at any pharmacy or health food store, but you can also make this incredible substance yourself when you have methyl B₁₂ on board, not cyano. Indeed, the ability of B₁₂ to protect nerve cells may also be thanks to the increased SAME in the body.

Cyanocobalamin is extremely popular and sold nationwide. But since you are reading my book and want my opinion, I am gently pushing you (okay, maybe I'm shoving a little, but I really care) toward methyl B₁₂. Methyl B₁₂ is better absorbed, and tissues retain it better. I want you to break out your magnifying glass and make sure your product says methylcobalamin on the label, not cyanocobalamin. I'm suggesting that you do this because your liver has to spin cartwheels in order to process the cyano type. Your liver and kidneys have to go through a time-consuming and taxing chemical reaction to jettison the cyanide molecule and convert the cyanocobalamin into methylcobalamin. Don't freak out, though. You're not going to die from cyanide poisoning if you take the inferior version; there's not enough of it.

The absorption of vitamin B₁₂ depends on the presence of intrinsic factor, which is made in the GI tract. Many people do not have enough intrinsic factor to absorb B₁₂ from their food or supplements. That's one reason why maintaining gastrointestinal health is important. (For more on this, read [Chapter 17](#) on probiotics on page [221](#).) People who opt for injections of B₁₂ almost exclusively get cyanocobalamin, not methylcobalamin. I don't recommend the cyano form for injections either. To get the methylcobalamin in an injectable form, you'll have to ask your doctor. (Okay, you'll actually have to nag!) And he or she will have to phone the local compounding pharmacy and ask them to make it.

Compounding pharmacies have the formula and make excellent, pure versions of injectable methylcobalamin all the time for the holistic-minded physicians in the area. Honestly,

they know what they're doing. To find a compounding pharmacy, look in your Yellow Pages. If you can't find one there, contact the International Academy of Compounding Pharmacists at 800-927-4227 or www.iacprx.org. You can also try the Professional Compounding Centers of America at 800-331-2498 or www.pccarx.com.

If needles bother you or you just don't want to deal with the hassle of a prescription injectable form, then get an oral version of methylcobalamin; these supplements are sold at all health food stores. My point is: Get the methyl B₁₂ in any dosage form before you take cyano B₁₂. Studies have compared the two versions, and the methyl version always comes out on top. The studies are clear and undebatable. Individuals who took the natural methylcobalamin form of B₁₂ showed better concentration, exhibited more alertness, and experienced sleep that left them more refreshed.

You can expect to pay more for methylcobalamin, but in my opinion it's totally worth it. For the injectable version, we're talking something that costs \$45 versus \$15. So it's not a mortgage payment or anything. Oral supplements are \$10 to \$20 a bottle.

There is a low incidence of toxicity associated with methyl B₁₂, even at very high doses. With cyanocobalamin, on the other hand, it's easier to get excessive amounts and experience side effects. That's because your body has to do more processing with cyanocobalamin, and tiny amounts of cyanide molecules may accumulate over time and cause subtle vision damage.

For whatever reason, if you have to take the cyano form of B₁₂, my best advice is to take it for only a few months or less, especially if you are taking relatively high dosages. Taking large doses of any form of B₁₂ (methyl or cyano) will tilt all your vitamin Bs out of ratio. Some people just naturally have a lot of B₁₂ to begin with. Very often, people with mitral valve prolapse or rheumatoid arthritis have higher levels of B₁₂ and/or cobalt levels, so taking high supplemental doses could be harmful. It may not be wise for people with schizophrenia

to take high doses of B₁₂ either, except on the advice of their doctors.

Installing a Nutrient Security System

Medical experts maintain that no amount of B₁₂ will help you if you take the supplement by mouth and happen to lack intrinsic factor in your digestive tract. This substance is a protein secreted by certain cells in the stomach. In humans, it aids in the absorption of vitamin B₁₂ from your intestine. If you can't make or use intrinsic factor properly, the condition of B₁₂ deficiency (pernicious anemia) results. So one way to install a foolproof security system and be 100 percent sure you're getting methyl B₁₂ is to bypass your digestive tract. There are three ways to do that:

1. Take methyl B₁₂ tablets sublingually (so it goes from your mouth to your bloodstream).
2. Take methyl B₁₂ shots intramuscularly (so it goes from muscle into your bloodstream).
3. Take methyl B₁₂ formulas that are combined with intrinsic factor (which gives you a better chance of absorbing B₁₂ if you don't make it yourself).

What's in My Cupboard?

The B vitamins are interdependent. In other words, it's very easy to tilt your Bs out of their perfect balance. If you take B₁₂ chronically, you may become deficient in another B vitamin. So whenever you take high doses of a single B vitamin, take a B complex as well so that the other Bs are on board. If you take high doses of B₁₂ only occasionally or daily, but for less than a month or two, then you don't need the B complex.

Preferred Sublingual Methyl-B12 by Applied Health: These tablets give you B₁₂ in the proper methyl form, providing 5,000 mcg (5 mg) in one naturally sweetened cherry tablet. Many people require large doses of B₁₂, and this

product provides just that. Speak to your doctor about substituting this formula for prescribed injections of B₁₂. (Hey, who likes needles, anyway?)

Methylcobalamin by Life Extension: Each dissolvable lozenge contains 5,000 mcg. The formula does not contain any artificial sweeteners, colorants, gluten, or milk. This is another strong version of B₁₂ that could be taken if you're needle shy.

Sublingual B₁₂ by ProThera: Each chewable tablet contains 5,000 mcg methyl B₁₂.

B₁₂ Infusion by Enzymatic Therapy: This product contains pure methylcobalamin in a chewable tablet offering 1,000 mcg per dose. It is free of yeast, dairy, and gluten. Because it is all natural, color variations may occur in the rapidly absorbed tablets.

Methyl B-12 1000 by Jarrow Formulas: These lozenges taste really good and are free of all allergenic ingredients. I often carry some of these in a little pill case in my purse for a quick pick-me-up. They also come in a 5,000 mcg strength.

Methylcobalamin lozenges by KAL: Each lozenge contains 1,000 mcg methyl B₁₂ in a natural berry flavor.

Advanced B-12 Complex by Source Naturals: This formula contains both methyl B₁₂ and another active form of B₁₂ called adenosylcobalamin, providing B₁₂ in two highly usable forms. It also contains some folic acid since B₁₂ works better when its partner folic acid is hanging around.

B-Complex #12 by Thorne Research: I like this formula because it contains two active forms of B₁₂ as well as all the active versions of the other B vitamins. So it's a full B complex with lots of B₁₂.

Niacin (Vitamin B₃)

Niacin was the third B vitamin to be discovered, so it's often referred to as vitamin B₃. It is best known for its ability to open blood vessels and capillaries wider. Capillaries are the tiniest blood vessels in your body; they supply your skin and hard-to-reach areas. Some capillaries are so narrow that blood cells have to flow through them in single file, like a procession. If they get clogged up over the years, they can completely close off. When niacin comes along and widens them, more blood flows. Health nerds like me call this process vasodilation. When it occurs, you turn pink, get a heat sensation everywhere, and feel all tingly.

The fact that niacin can widen arteries and increase blood circulation to such an extent means that it helps lower blood pressure and cholesterol while supplying more blood to the heart. In fact, studies confirm that niacin can help with all of these conditions and more.

The first statin cholesterol-lowering drug, lovastatin (Mevacor), was introduced to the American market in 1986. It made millions for its makers, of course, but the simple nutrient niacin has the ability to do the job at least as well and maybe better. And now I'm going to tell you something that just annoys the heck out of me, and I'm sure it's going to upset you, too, especially if you have high cholesterol. As far back as 1994, doctors knew that niacin performed better than statin cholesterol drugs. They knew it!

In a small, head-to-head study published in the *Archives of Internal Medicine* that compared niacin with lovastatin, niacin outperformed the drug. In the randomized, placebo-controlled 26-week study, niacin raised the level of good cholesterol (HDL) by 33 percent compared to lovastatin's measly 7 percent. What's more, niacin was also shown to simultaneously lower levels of lipoprotein(a)—or Lp(a)—and fibrinogen, two substances that are strong risk factors for a

heart attack. It lowered LDL (the bad kind of cholesterol) a little bit too. Lp(a) is really important. You won't hear doctors talking about it much, but elevated Lp(a) can make you 10 times more likely to develop heart disease than high LDL, which everyone seems to obsess over.

So it looks like niacin actually does work harder than statins to protect your heart and circulatory system. That's hard to believe, and I'm betting that most folks reading this book have never been told that niacin just might work better than a statin drug.

Niacin has the added benefit of reducing fibrinogen levels. Fibrinogen is a substance that makes blood thick and clotty, and high levels contribute to strokes. Best of all, niacin has the HDL-raising capabilities that statins can only dream of having.

So why isn't niacin suggested more often for lowering cholesterol? For one thing, this nutrient can't be patented in its natural form, so drug companies can't make tons of money from it. Some smart cookies in the pharmaceutical world found a way to patent an extended-release formula that is sold by prescription. This drug is very effective and fairly affordable too, but it is not the same as natural niacin, the way it's found in nature.

As I mentioned, there is one pesky side effect of niacin. When the nutrient is taken in the therapeutic doses necessary for lowering cholesterol, it undergoes conversion in the body to form the active compound niacinamide. During this conversion, your blood vessels widen (which is a good thing), but as they do, you experience flushing—heat and redness.

Within an hour of taking a large dose of plain niacin (not extended release), your face might turn beet red. This response is known as a niacin flush. If you're supersensitive, you'll feel like a firecracker! Menopausal women can sympathize here because they deal with hot flashes (ahem, power surges) all the time. Some people find that taking one aspirin (81 to 325 mg) or ibuprofen (Advil, Motrin) is enough to curtail the prickly, hot effect induced by niacin. You should take the aspirin about 30 minutes before you take the niacin in order to minimize (or hopefully eliminate) the heat!

Because of these troublesome effects, I always recommend that people taking niacin be supervised by their doctors, even though the supplement is inexpensive and widely available in health food stores. Nevertheless, niacin is still commonly used for heart disease and is often suggested by physicians in the know. Taking the correct form of niacin (nicotinic acid) is an established natural treatment for high cholesterol.

If you'd like to try niacin as a cholesterol-lowering treatment (or as an alternative to statin medications, or as an add-on with your statin), please discuss it with your doctor. Unless your doctor has asked you to do so, you should not be using large doses of niacin to lower your cholesterol at the same time you're taking statins because cholesterol is actually important to the body. Surprise! We need it to stay healthy, happy, and strong, and yet it feels to me that many health professionals are on a mission to lower your cholesterol to the point of unwellness.

I'm pointing out that niacin works! So do the drugs, and the combination of your OTC supplement with your prescribed medication is going to do an outstanding job of driving your numbers down. It is well known today that niacin enhances the effect of statins, and the two are commonly prescribed together. I just don't want you to take this combination without consulting with your doctor. You need to be under a doctor's supervision for either form of treatment. Some drugmakers are combining niacin with statins. Two medications on the market that combine niacin with a statin are Simcor and Advicor. That's how good the combination of niacin plus statin works; it's so good that pharmaceutical companies are cashing in on it!

Niacin can help with many other conditions related to blood circulation. In one study published in the *British Journal of Clinical Practice* in 1988, niacin was shown to help with intermittent claudication, a condition that involves heaviness, achiness, burning, or cramping in the legs that happens while walking and goes away when resting. It's a result of poor blood flow, and niacin helps because it makes the blood flow better. The dosage in the study was very high, 2,000 mg twice daily, much higher than I would recommend. If you have this

condition, feel free to ask your doctor if you should slowly work your way up to a high dosage like this, based upon the findings of the study. Your physician will know what's right for you.

The therapeutic benefits of niacin are by no means limited to the heart and circulatory system. Studies show that this B vitamin is helpful for many other conditions. In one small but important study of 80 women who were experiencing heavy menstrual cramps, niacin appeared to help. The women took 100 mg twice daily starting 7 to 10 days before menses was to begin, and the same dose several times a day during heavy cramping. Some 90 percent of the women in the study reported significant benefit.

In this study, researchers used a special form of niacin that requires you to learn a new big name—inositol hexaniacinate. You don't have to pronounce that, just commit it to memory so that you can read labels at the health food store and find it. This form of niacin won't make you turn beet red. It's not found in nature. It's made chemically by attaching six molecules of niacin to one large molecule of inositol, hence the name inositol hexaniacinate. Your body requires time to break this tight molecule apart, so it's considered slow release for all practical purposes. To give you an idea, it takes about 6 to 10 hours to unlatch all the niacin molecules with this form, whereas with plain niacin (the flushing kind) your body can utilize it within 30 minutes to an hour.

Niacin also seems to work a little bit like a tranquilizer, but milder. Some studies show that niacin's effect on the body is similar to antianxiety drugs in the benzodiazepine class, such as Valium (diazepam), Xanax (alprazolam), Ativan (lorazepam), and others. Doctors in Italy have even used niacin to help people get off these addictive drugs. Since niacin mildly mimics the medication, it helps curtail the effects of withdrawal. If you are prone to anxiety or depression, you might want to add a niacin supplement in a low dose to your regimen. Now don't get too excited. Niacin's calming effect is not going to solve marital problems or disagreements with your teenager, but it could help bring a little peace of mind if you're a worrywart.

Because it increases blood flow to the eyes and the brain by widening those tiny capillaries, this powerful B vitamin also seems to help people with the common vision disorder macular degeneration. It also helps at the beginning stages of Alzheimer's disease.



Niacin, Nutrient of Many Names

I wish scientific people would simply call niacin vitamin B₃ to keep life simple, but B₃ is anything but. It's known by all sorts of names. Let me briefly try to help you understand what you might see on product labels so that you know what you're getting and what symptoms it might help you overcome. Vitamin B₃ comes in two basic forms:

1. Niacin, also called nicotinic acid
2. Niacinamide, the amide form of niacin. "Amide" is simply a chemistry term that recognizes that the molecule is metabolized differently. This compound is biologically active. In a perfect world, your body converts niacin to niacinamide.

Now think this out slowly with me. It's clear from number one above that niacin is also called nicotinic acid. So it makes sense to learn that the amide form of niacin (niacinamide) can also be called nicotinamide. And that compound, in fact, is the body-ready activated version your cells utilize. And therein lies the confusion. You can see either niacinamide or nicotinamide on product labels.

Now listen carefully. When nicotinamide undergoes a chemical reaction in your body, it forms an important by-product (metabolite) called nicotinamide adenine dinucleotide, which is thankfully abbreviated as NAD on product labels. You also see it abbreviated as NADP; the "P" stands for phosphate. Sometimes you see it as NADH. (Don't ask me why they put an "H" on it, because I already have a headache from all this.) And are you sitting down? Sometimes you see this NAD or NADP or NADH as "coenzyme 1" on product labels!

I told you they should just call it B₃, didn't I?

I'm not kidding when I tell you that you can see vitamin B₃ labeled in all these different ways, depending on what type of B₃ it is and who the manufacturer is.

Now stick with me because the plot thickens even more. There is a variation on B₃ called inositol hexaniacinate that is also commercially available! The advantage of inositol hexaniacinate is that inositol itself is an essential compound, and some people are deficient in it. Taking it in this form is advantageous because inositol (also known as vitamin B₈) is a good antidepressant! I think researchers have nothing better to do than confuse the public like this, but it's true, so if you do the math, you'll see that good ole B₃ might be called nine different names!

Certain forms of B₃ only do so much in the body. For example, niacinamide or nicotinamide does not generally cause the infamous hot flash, nor does it lower cholesterol as well as niacin. Niacinamide or nicotinamide does, however, make energy for you and protect your gastrointestinal tract, especially your pancreas. Niacinamide jumps into your energy-producing pathways to help make ATP, which helps with cellular respiration and energy metabolism throughout the human body. This is a very important role.

There is also evidence to show that nicotinamide helps with arthritis. This form is involved in preserving and improving beta cell function, too. Beta cells are the ones that reside in your pancreas and produce your insulin. This means nicotinamide enhances insulin secretion and improves the sensitivity of your cells to insulin (it makes the insulin you have more effective). To make a long story short, nicotinamide protects you from pancreatic insufficiency and diabetes, so it's helpful for both treatment and prevention of this disease. FYI, it is helpful for both type 1 and type 2 diabetes. You will find studies on the Internet that say that niacin can raise blood sugar, but this is controversial and I think that you're fine taking this supplement at low doses and with adequate monitoring. For more on diabetes, read my other book, *Diabetes without Drugs*.

Niacin is often found in supplements used to detoxify the body. Because it improves blood flow to capillaries, this nutrient apparently helps pull toxic buildup from fatty cells and tissues. Releasing toxins like this could make you feel itchy, and that's normal. (Of course, if you're looking to detoxify your cells and dump all that waste, your best bet is to focus on your diet and make sure you get lots of fresh produce, fruits, and homemade juices, because eating better makes your biochemical system run more efficiently. Most importantly, you should reduce your trans fat intake. Yes, that means saying no to fried chicken and potato chips.)

A serious niacin deficiency, a condition known as pellagra, involves diarrhea, poor appetite, muscle weakness, fatigue, irritability, rough or cracked skin, sore red eyes, eye pain, headache, mood swings, inflamed tongue, depression, anxiety, and memory loss. After some time, niacin deficiency may lead to chronic diarrhea, dehydration, dementia, Alzheimer's disease, dermatitis, and other skin problems. Any of these

symptoms can develop in people who routinely drink alcohol or those who take drug muggers of niacin.

When niacin runs low, so does riboflavin, and possibly B₆ and other B vitamins. The B family sticks together and its members work in conjunction with one another. That's why it's always good to take a well-rounded B complex even while supplementing with one B vitamin in particular.

As I mentioned, niacin is also known as nicotinic acid. When some people hear that term, they are leery of taking it because they think it could hurt them the way nicotine in cigarettes does, but this is not true. Nicotinic acid does not pose the same danger as the nicotine in cigarettes. In fact, niacin used to be widely known as nicotinic acid; the term was changed to help allay these concerns.

The nicotine in cigarettes is actually a drug mugger of niacin. One of the ways that smoking causes such catastrophic effects in the human body is by competing with niacin for your cells' love and affection. More specifically, nicotine looks so incredibly similar to nicotinamide (niacin's active form) that it fakes your cells out and interferes with the absorption and utilization of nicotinamide. From the starving cells' point of view, smoking causes nicotinamide deficiency.

Most experts feel that it's rather hard to become deficient in niacin, but I don't think it's that rare. In my book, deficiencies are common in people who routinely drink alcohol, eat processed foods, take high dosages of other B vitamins (causing a relative deficiency in niacin), are genetically stumped when it comes to activating B₃ to its body-ready form, or take drug muggers of niacin. So you see that quite a lot of people are probably niacin deficient. And if you are wondering what type of B₃ I suggest out of all those crazy names, I think that nicotinamide or its metabolite NADH are the better forms for drug mugging replenishment. If you are simply trying to lower your cholesterol, I recommend taking plain niacin (nicotinic acid) and working the dose up slowly to get used to the flush effect, which will subside over time.

Too much niacin in supplemental form (and what's too much for you may not be enough for someone else) may interfere with blood sugar control (as we've seen, some studies show that it can raise blood sugar), increase gout episodes, damage the liver, and increase the homocysteine level. Homocysteine is an inflammatory chemical that contributes to heart disease. To be clear: If you take the right dose of niacin, it can help prevent and treat heart disease, but if you take too much, you could actually contribute to the problem. That was what researchers discussed in a 1996 study published in *Coronary Artery Disease*. So it's a really good idea to discuss the therapeutic use of niacin with your health-care provider.

Drug Muggers of Niacin (Vitamin B₃)

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Antacids (all of them because they change the pH in the gut)

Antibiotics (just a few examples)

Amoxicillin (Amoxil)
Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)

Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Isoniazid (INH)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Penicillin (Pen VK)
Sulfamethoxazole and trimethoprim (Bactrim Septra)
Tetracycline (Sumycin)
Trimethoprim (Proloprim)

Antigout

Probenecid (Benemid, Col-Benemid)

Anti-inflammatory drugs

(NSAIDs)

Celecoxib (Celebrex)

Diclofenac (Voltaren)

Etodolac (Lodine)

Ibuprofen (Advil, Motrin)

Indomethacin (Indocin)

Ketoprofen (Orudis)

Naproxen (Aleve, Anaprox, Naprosyn)

Sulindac (Clinoril)

Antituberculosis Agents

Ethambutol (Myambutol)

Isoniazid (INH)

Rifampin (Rifadin)

Cholesterol Agents

Cholestyramine (Questran)

Colestipol (Colestid)

Blood Pressure Drugs

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Diuretics, sulfonamide:

Indapamide (Lozol)

Triamterene/HCTZ (Dyazide, Dyrenium, Maxzide)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Activella, Climara, CombiPatch, Estraderm, EstroGel, Menostar)

Estrogens, conjugated (Prempro, Premphase)

Estrogen-containing drugs (Estrace, Estring, Femring, and many others—there are dozens!)

Ethinyl estradiol (found in many birth control pills)

Laxatives

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides

MISC:

Alcohol

Anything that mugs vitamin B₆ (because B₆ converts niacin to nicotinamide, so without B₆ you could run low)

Estrogen dominance

Low-protein diets

Nicotine (smoking)

Niacin: Put This on Your Plate

Cremini mushrooms, lean beef, liver, eggs, dairy products, chicken and other poultry, wild salmon, yellowfin tuna, corn grits, any kind of nut, peanut butter, and enriched cereals.

Also note that your body naturally produces niacin from tryptophan-rich food and that the niacin made in your own cells won't make you flush the way dietary supplements of niacin can. Tryptophan is found in small amounts in oats, chocolate, bananas, dairy products, meat, turkey, fish, chickpeas, sunflower seeds, pumpkin seeds, nuts, and spirulina.

An Absurdly Inexpensive Way to Feel Better

If you take too much niacin, you may become deficient in your other B vitamins. So whenever you take a single B vitamin, it

may be wise to take a B complex also so the other Bs are on board.

For general health: 50–100 mg per day

Drug mugger dose: 100–1,000 mg per day

Therapeutic dose: 1,000–2,000 mg per day, but ask your doctor first

Just So You Know

The word *niacin* actually comes from the combination of NlCotinic ACid vitamIN. (I've capitalized the letters NIACIN so you can see this clearly.)

The special flush-free form of niacin, inositol hexaniacinate, is widely available in health food stores. Many people say that this type is less irritating to the stomach, too. There are also prescription versions of niacin available, and your doctor may order one of them for you if you have high cholesterol. Just be aware that prescription versions of extended-release niacin have been associated with liver damage, so if you take one, have your doctor order liver function tests about every 6 months. It's best to take niacin in smaller doses at first and then work your way up. If you gradually increase the dosage, you are less likely to experience the skin sensations that are so common with niacin. Therapeutic dosages vary widely, from 100 to 2,000 mg, but usually are between 1,000 and 2,000 mg. You can take aspirin or ibuprofen a half hour before taking your niacin (prescription version or OTC). Since niacin increases blood flow, it makes sense that you should avoid hot drinks and even alcohol around the time you take your supplement. This will help reduce the amount of facial flushing. If you are prescribed bile acid resin drugs (i.e., colestipol, cholestyramine), which are also used to lower cholesterol, separate the dose from niacin by 6 hours or more.

Caution: Because niacin widens arteries and increases blood flow, it will naturally reduce blood pressure. If you take therapeutic doses of niacin, please be careful when you get up from a lying or sitting position. Your supplement or medication may cause you to feel dizzy or faint. Getting up

slowly may help until this effect lessens after a week or two as your body gets accustomed to the niacin on board.

If you have gout, do not take niacin without your physician's consent because it competes for elimination with uric acid. If your body is busy clearing niacin, then your uric acid might build up, triggering a gout attack. It's rare, but I want you to be aware of it. One more thing: Do not take niacin (especially the extended-release form) if you have liver problems, unless your doctor approves and monitors your liver function. People with liver dysfunction are better off with plain niacin or niacinamide (not extended release).

Install a Nutrient Security System

Assuming you have no malabsorption issues and you have sufficient acid in your stomach, niacin is absorbed from your gastrointestinal tract with ease. One way to help improve GI health and therefore niacin uptake is to make sure that you have a healthy supply of natural beneficial bacteria (probiotics) as well as digestive acid. Betaine supplements increase digestive acid and are sold at health food stores.

What's in My Cupboard?

Niacin (B-3) Caps by Twinlab: Each capsule contains 1,000 mg plain niacin (vitamin B₃) and is free of corn, soy, yeast, rice, barley, wheat, dairy products, citrus, fish, egg, and artificial flavors and colors.

Niacinamide Flush Free 250mg by Jarrow Formulas: Each capsule contains 250 mg niacinamide.

B-Complex #3 by Thorne Research: This product contains 20 mg plain niacin along with 275 mg niacinamide. The best thing about this brand is that it also contains niacin's sisters and brothers (the other B vitamins that are naturally found in a B complex—methylcobalamin, pyridoxine, thiamine, pantothenic acid, biotin, and the rest).

Kyolic Kyo-Chrome by Wakunaga: This multitasking formula contains aged garlic (odorless), which has been shown

to lower cholesterol in numerous studies, along with niacin and chromium to help stabilize cholesterol and blood sugar. It is made with the utmost attention to quality. The garlic is grown organically.

HDL Booster by Enzymatic Therapy: These capsules contain the perfect combination of niacinamide, vitamin C, folic acid, natural vitamin E, and some arginine (which widens arteries and improves blood flow). In addition, they have a blend of helpful herbs, including hawthorn, garlic, and grape seed. This product is specifically geared to improve heart health and help normalize cholesterol.

Slo-Niacin and Niaspan: These are two different slow-release niacin preparations available only by prescription from your doctor, so they are FDA approved to treat high cholesterol. Never break, crush, or chew slow-release formulas unless they are scored and you are told that it is safe to do so by your pharmacist. In my opinion, these prescription versions don't have any tremendous advantage over OTC versions, but you may have insurance that allows you to pay a small co-pay for a prescription, whereas the OTC version would be completely out-of-pocket. Be sure to monitor liver enzymes routinely through your doctor's office if you take extended-release formulas (prescription or over the counter). It's a simple blood test.

Potassium

You never want to run low on potassium. If you do, you could develop problems all over your body, especially in your muscles and nerves. Unfortunately, it's all too easy to experience a shortfall of this important mineral, especially if you have diarrhea or if you get mugged by a drug. Potassium deficiency can come on slowly, either from taking drug muggers or from poor nutrition, chronic illness, or pain. Symptoms usually include muscle weakness, fatigue, drowsiness, poor reflexes, muscle spasms, leg cramps, heart arrhythmias, and nerve excitability. Potassium deficiency can come on very quickly in certain cases, and result in all of the above symptoms as well as severe irregular or rapid heartbeat, confusion, high or low blood pressure, vomiting, abdominal distension, paralysis, sensations of pins and needles, and fainting.

Many scientific studies have been done on this important mineral. It's now well established that low potassium can cause increased risk of high blood pressure and death from heart attack and stroke. It's ironic that many blood pressure medications make the potassium drug mugger list, because potassium is needed for healthy blood pressure! Other signs and symptoms of too little potassium include constipation, osteoporosis, constant thirst, and heart disease.

Potassium is very important to your heart and blood pressure. It ensures a regular heartbeat. This mineral is called an electrolyte because it helps with water balance and electrical circuitry in the body. It helps fire nerve impulses, aiding in muscle contraction. Without that electrolyte assist from potassium, muscles couldn't work properly.

Some people claim that potassium supplementation can help cure alcoholism, but this is simply not true. People who are withdrawing from alcohol may become deficient in potassium during this debilitating stage, so adequate supplementation

may be necessary under the care of a physician. But potassium supplements do not stop the craving for alcohol, nor do they ease symptoms of withdrawal.

In addition to blood pressure medications, the long list of drug muggers of potassium includes medications that improve breathing, reduce pain, and promote regularity.

Most adults get enough potassium in their diets. If, for some reason, you do need to take a potassium supplement, be careful not to overdo a good thing, because this mineral affects the heart and interacts with many prescribed drugs. For example, potassium may cause a dangerous rise in the level of amiloride, a drug used to treat water retention and fluid buildup. In OTC dosages, problems like this are extremely rare. It's most likely to occur with prescribed potassium because the dosages are exponentially higher.

Doctors sometimes prescribe fairly high dosages of potassium and then carefully monitor their patients' blood levels every few months. Certain patients, like those with chronic kidney disease, will more than likely require higher dosages.

Potassium is irritating to the delicate mucosal lining of the digestive tract and so could increase the risk of ulcers if taken along with other medications that are hard on the stomach, like atropine, belladonna, or the bone-building drugs used for osteoporosis. If you take digoxin, make sure that your potassium level is measured routinely and that you don't run low on it, a condition called hypokalemia. Developing low potassium while taking digoxin can be fatal. Having too little potassium is much worse for you than having too much because hypokalemia causes dangerous cardiac arrhythmias. Did you catch that? Low potassium is far more dangerous than a high level. It's usually the other way around.

People who sweat a lot or exercise vigorously have an increased need for potassium. This is the basis of those sports drinks on the market (like Gatorade) that replenish lost potassium. Potassium is also available at the pharmacy in prescribed strengths of up to 20 mEq (milliequivalents), which is about 1,500 mg. Potassium is often measured in

milliequivalents in laboratory tests, although the supplements are converted to milligrams. Most supplements sold at health food stores come in dosages of 99 mg. Why not a hundred? Go figure.

Various types of potassium drugs are sold by prescription. The brand names include Micro-K Extencaps, Klor-Con, Slow-K, and K-Dur. These forms should be taken with a meal and a full glass of water. But whether you take high dosages or low dosages of potassium, the mineral is very hard on the stomach and often creates stomach upset when taken orally. It can seriously increase the risk of gastric and esophageal irritation. There's even a possibility that it may poke microscopic holes in the delicate mucosal lining of the esophagus, stomach, or intestines. This seems to occur more often if the potassium is taken in liquid form without enough water to chase it down. Extended-release formulations, usually taken by prescription, have been associated with ulcers, too.

One way to get around the gastric issue caused by oral potassium is to buy the OTC form in powder and put a little in your bathwater. Potassium goes right through your skin exactly the same way magnesium does. But be careful and use only small dosages as directed on the label. Potassium powder is not dosed like Epsom salts, which you can dump plenty of into the bathtub and just relax. You only need a teaspoon or capful of potassium, depending on what your product's label directions say. Consult your doctor to find out what dosage is right for you.

Drug Muggers of Potassium

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium) Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Aspirin (Bayer, Ecotrin, St. Joseph)

Butalbital compound and aspirin (Fiorinal)

Carisoprodal and aspirin (Soma Compound)

Ketoprofen (Orudis)

Oxycodone and aspirin (Percodan)

Salicylate drugs or herbs

Antibiotics (just a few examples)

Amoxicillin (Amoxil, Augmentin)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Isoniazid (INH)

Levofloxacin (Levaquin)

Lomefloxacin (Maxaquin)

Minocycline (Minocin)

Moxifloxacin (Avelox, Vigamox)

Sulfamethoxazole and trimethoprim (Bactrim Septra)

Tetracycline (Sumycin)

Anticonvulsants

Pregabalin (Lyrica) (not a drug mugger, this boosts potassium levels)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Roloids)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antigout

Colchicine (Colcrys)

Antivirals

Delavirdine (Rescriptor)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

Hydralazine (Apresoline)

ACE inhibitors:

Enalapril and HCTZ (Vaseretic)

Ramipril (Altace)

Angiotensin II receptor blockers:

Telmisartan and HCTZ (Micardis HCT)

Valsartan (Diovan)

Valsartan and HCTZ (Diovan HCT)

Calcium-channel blockers:

Nifedipine (Procardia)

Verapamil (Calan, Verelan)

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Atenolol and chlorthalidone (Hygroton)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, potassium-sparing diuretics (possibly, however this is not conclusive)

Bronchodilators

Albuterol (syrup, tablets, nebulizer solution and inhalers like Ventolin, ProAir, and Proventil)

Corticosteroids

Dexamethasone (Decadron)

Hydrocortisone (Cortef)

Methylprednisolone (Medrol)

Prednisolone (Pediapred liquid)

Prednisone (Sterapred)

Inhaled corticosteroids:

Budesonide (Rhinocort)

Fluticasone (Flonase)

Glaucoma

Acetazolamide (Diamox)

Hormone Replacement Therapy/Oral Contraceptives

Estrogen-containing drugs

Estrogens, conjugated (Premarin, Premphase, Prempro)

Immunosuppressants

Cyclosporine (Sandimmune)

Tacrolimus (Prograf)

Laxatives

Bisacodyl (Dulcolax)

Long-Acting Beta Agonists (LABAs)

Salmeterol (Serevent inhaler and Advair diskus)

Parkinson's Drugs

Levodopa and carbidopa (Sinemet)

Stool-Softeners

Docusate and casanthranol (Peri-Colace)

MISC:

Alcohol

Cesium supplements

Coffee, tea, and soda (caffeinated)

Excessive salt intake

Stinging nettle herb

White willow bark

Potassium: Put This on Your Plate

Swiss chard, tomato puree, figs, currants, seeds, crimini mushrooms, spinach, romaine lettuce, celery, beets (boiled), beet greens, mustard greens, fennel, broccoli, winter squash, blackstrap molasses, grilled snapper, mackerel, eggplant, kale, brussels sprouts, turmeric, asparagus, cauliflower, apricots, potatoes, raisins, ginger, yams, kiwifruits, chile peppers (dried), adzuki beans, cabbage, barley, bananas, oranges, avocados, watermelon, kidney beans, pistachios, prunes, and salt substitutes.

An Absurdly Inexpensive Way to Feel Better

Even though hypokalemia (low potassium) is far more dangerous to your heart than hyperkalemia, it's all too easy to get yourself in trouble with potassium supplements if you also take prescribed medications or have a chronic illness. In these situations, it's best to concentrate on food sources if you feel you need an additional supply of this mineral or to consult with your doctor before taking large doses of potassium.

For general health: 200–400 mg per day with food and plenty of water

Drug mugger dose: 300–1,000 mg per day (consult your physician for proper dosage)

1 cup acorn squash: 900 mg

1 banana: 450 mg

1 cup watermelon: 550 mg

½ cup raisins: 550 mg

8 ounces Gatorade: 30–40 mg

Just So You Know

Do not crush or chew tablets that are extended-release supplements, such as Slow-K or Klor-Con. Take all doses of potassium with a full glass of water or juice. It's better to take small doses throughout the day rather than one big dose. Always follow the label directions on your formula regardless

of the dosages that are provided here. The dosages in this book are provided as general information, but individual needs vary widely.

You know you are getting too much potassium if you develop diarrhea, nausea, stomach pain, or confusion. Some people who exceed normal doses or have poor gut integrity experience darkened, tarry stools—a sign that GI bleeding has occurred. You should stop taking potassium immediately and call your doctor if this happens. Other warning signs that you are getting too much potassium include slow heartbeat; numbness; anxiety; fatigue; heaviness of the legs; and tingling in the hands, feet, or lips.

Install a Nutrient Security System

When you lose potassium, you often lose protein in the body as well. One way to improve these simultaneous losses is to make a smoothie that contains both. It's yummy and good for you! Just put all of these ingredients in your blender and give it a whirl:

1 banana (or 5 pitted apricots)

1 cup orange juice (fresh squeezed if possible)

½ cup fresh or frozen strawberries (or raspberries)

1 scoop whey powder (or hemp or rice protein powder)

What's in My Cupboard?

Potassium Amino Acid Complex by Solgar: These veggie caps are kosher and contain 99 mg of potassium in a bioavailable amino acid complex. This product is sugar free, gluten free, and dairy free.

Potassium Gluconate 99 by GNC: These are vegetarian caps and are kosher. They contain 99 mg of potassium per capsule. GNC also makes an intelligent formula that contains potassium and magnesium in a 1:1 ratio. It's called **Potassium and Magnesium Aspartate 250**.

Potassium Gluconate by NOW: Each teaspoonful (3.48 grams) of this powder contains 540 mg of potassium, which can be taken once daily with food. You can add a little to your bathwater for additional absorption through your skin. Check with your doctor about dosage.

Potassium Plus by Enzymatic Therapy: This innovative blend provides food-grade potassium from the juices of oranges and sugarcane. It also provides a wonderful combination of trace minerals, including selenium, silicon, boron, nickel, and tin. You need these minerals for healthy blood pressure as well as bone health. If that isn't good enough, it also contains B₆ and pantothenic acid (vitamin B5), which help reduce cholesterol and homocysteine while raising your energy level. This blend is perfect for blood pressure and heart health!

Probiotics

You've probably heard the word *probiotic* or seen the words *live active cultures* on yogurt containers. These are popular terms found on food and supplement labels to describe living bacteria that your digestive tract need for good health.

Let's back up. You may not have even realized that you have good bacteria in your intestinal tract. You weren't born with them. In fact, at birth you had a weak immune system and no bacteria at all living inside you. When you started to consume food for the first time—mother's milk and other foods introduced later—you also ingested beneficial bacteria that attached themselves to your gut wall and started to grow. They helped you build a strong immune system.

During your childhood, a healthy camp of good bacteria naturally took up residence in your gut. As a young adult, you are supposed to have trillions of these helpful microorganisms living in your gut. Your camp of intestinal flora is like a fingerprint. No other human on Earth has the same exact camp of microorganisms. Good bacteria protect you from bad bacteria. It's shocking, but a healthy gut should have about 3 pounds of normal intestinal flora. A 2009 study published in the *Journal of Evolutionary Biology* and conducted at the University of Arizona College of Medicine found that some of the healthy flora is stored in the appendix, which had long been thought to be useless. People without an appendix need to be vigilant about creating and maintaining a constant camp of flora because they have lost their storage unit.

The good bacteria colonize the entire surface of our intestinal tracts and affect every single aspect of our health. In fact, people with enough healthy bacteria in their guts are less likely to develop heartburn, gas, diarrhea, and constipation. The good news is that if for some reason you don't have this colony of happy campers in your gut, if something has happened to wipe them out—more on this in a moment—you

can introduce them with a probiotic supplement. This supplement is helpful for anyone with any type of gastrointestinal complaint. In fact, I think everyone should take probiotics if they are willing to take one supplement a day.

Probiotic supplements contain many different strains of bacteria, but they all generally come from two genera, either *Lactobacillus* or *Bifidobacterium*. These two groups are known to regulate the immune response by increasing secretory immunoglobulin A (IgA), which means that they strengthen your ability to fight off germs. They also reduce dangerous inflammatory chemicals in your body, produce antimicrobial substances, improve the gut's mucosal lining (which may prevent food allergies), modulate gene expression, and, in a process known as decreasing pathogen adhesion, prevent pathogens from infecting the gut.

Why do I tell you all this scientific stuff when we are just talking about gut bugs? Because I want you to have enough information to inform your health-care practitioners of your desire to supplement with probiotics, and why. These bacteria are very, very important to people with chronic illnesses, but virtually everything you put in your mouth, from foods to drugs, will mug beneficial bacteria. In my book, restoring these friendly organisms is key to optimal health. Getting your individual camp to flourish is better than taking doses of probiotics into your system that your body may not even recognize.

If you want to learn more about this important topic, follow the work of Doug Kaufmann, the host of the *Know the Cause* television program (www.knowthecause.com) and the author of numerous books on the subject, including *The Fungus Link to Health Problems* and *Infectious Diabetes*. His books offer life-changing information that can help you restore good health. Within a minute of meeting Doug, you know you are in the presence of someone special who genuinely cares about your health and wants to make your life better. Watch him on TV and you'll see exactly what I mean. Some of our TV shows together are posted at his Web site, and I do a medical minute on his show now, too.

When I interviewed Doug Kaufmann for this book, he talked about fires, as in the kind that burn down forests! Just go with him on this, as it's a fantastic way to look at your gut:

“Reforestation is the necessary process of landscape restoration that occurs when fire burns through the natural terrain of a forest. Soon thereafter, in an effort to save not only the terrain of the forest itself, but the wildlife, forest keepers quickly plant new fledgling indigenous trees and plants. Disease in the forest and the animals will be successfully abated by this process.

“Why hasn't anyone thought of restoring the terrain of the intestines after a similar ‘fire’? Antibiotics are analogous to the forest fire because life-forms (bacteria) are destroyed. Unbeknownst to many physicians, antibiotics are most often poisonous fungal by-products called mycotoxins. I have long contended that intestinal damage caused by antibiotics often comes back to haunt a patient long after the antibiotic therapy has stopped.

“I suspect that serious systemic diseases known to be caused by mycotoxins could be averted if doctors would understand the importance of mandating *probiotics* with each and every *antibiotic* prescribed. If you have ever taken antibiotics and now suffer from any number of symptoms and/or diseases, a 30-day trial run of probiotics and a grain-free diet should be instituted. It seems that even the human body needs to ‘go green’ with regard to reforestation!”

Antibiotics save lives and I like them as a class of drugs, but they are the worst drug muggers of beneficial bacteria. If you've ever taken an antibiotic, you've decimated your healthy camp of bacteria; the antibiotic goes off like a shotgun in your gut. That's not an excuse to stop taking your antibiotic, though. Naturally, you need them if you can't fight off dangerous infections yourself. But I personally think the entire category of antibiotics should be renamed *Normalfloricus stupidicus*. They are stupid because they can't distinguish the good guys from the bad guys, so they kill everything in sight, normal flora included. That's why you end up with diarrhea,

cramps, vaginal yeast infections, or jock itch every time you take an antibiotic.

When you need to take an antibiotic, you should supplement with a probiotic to replenish what the drug mugger steals. While I realize that antibiotics destroy the beneficial bacteria—including a probiotic supplement—I still recommend that you take a supplement even while you're on your course of antibiotics. By doing this, you reseed the gut with healthy flora and can significantly reduce the gastrointestinal side effects of the drug therapy. Basically, you are just running damage control. It may translate into getting softer stools on day 10, rather than terrible cramps and diarrhea on day 4.

I recommend that you take probiotics at least twice a day, but more often if you want to. If you can get only two doses in, take the first one 4 to 6 hours after your morning antibiotic dose, and again at night 2 hours after your last antibiotic dose (if you take the antibiotic at night, that is).

Studies conducted on lactobacillus GG, a special strain of bacterium, showed that the supplement reduced antibiotic-induced diarrhea. However, I recommend probiotic supplements every day, not just during antibiotic usage.

You need to have normal flora to help you digest and absorb your food. A person with a lot of beneficial bacteria has a stronger immune system because these small friends neutralize many dangerous and cancer-causing substances. When you have a healthy camp of bacteria in your gut, dangerous organisms can't take over so easily. Without enough beneficial flora, you wind up with an overgrowth of *Candida albicans* yeast, gut dysbiosis, *Escherichia coli*, parasites, and other bad bugs. People who lack beneficial flora frequently experience yeast infections, urinary tract infections, skin problems, fatigue, jock itch, irritable bowel syndrome, belching, diarrhea, heartburn, and chronic fatigue.

Most people who don't have enough good bacteria inside them experience a lot of gas, bloating, or cramps after eating. Did I say gas? Yes, a lot of that! People tend to get used to these symptoms and chalk them up to irritable bowel syndrome, or perhaps bad genetics, so I want to emphasize the

importance of probiotics. Having healthy levels of intestinal flora can help you feel better and may, in some cases, relieve bowel conditions like those I mentioned above as well as constipation.

Remember, it's not just the following list of drug muggers that can create an imbalance in your intestinal tract. Stress, illness, junk foods, sugary foods, alcohol, and coffee also tilt your gut flora in the wrong direction.

The lactobacillus and bifidobacterium strains are the most popular of the probiotic supplements you find in health food stores. They help your body make B vitamins such as biotin, folic acid, B₆, B₁₂, and niacin, among others. They also can increase the bioavailability of minerals such as magnesium, iron, copper, and manganese. The added minerals are important and help boost mood, improve immunity, increase energy, stabilize blood pressure, and regulate heart rhythm. Beneficial bacteria also help maintain a healthy pH, which is slightly acidic, between 5.5 and 6.5. The slightly acidic environment is conducive for the friendly microorganisms and helps to drive out the harmful ones. This means a healthy environment for your beneficial bacteria to grow and thrive. Good bacteria help process estrogen and thyroid hormones, so indirectly they can help ease menopausal symptoms and protect against breast cancer.

When it comes to picking a supplement, you need to understand the terms on product labels. Living bacteria in supplements are often measured in CFUs, or colony-forming units. Taking 10 billion to 40 billion CFUs per day is not uncommon, but 1 billion to 5 billion units is more typical. More is not better, because you don't want an unfavorable reaction. Supplements commonly contain 5 to 15 different strains of friendly bacteria. You may find some of the following names on your product: *Lactobacillus acidophilus*, *L. paracasei*, *L. rhamnosus*, *Bifidobacterium lactis*, *B. bifidum*, and many others. CFU is a bit of a marketing concept. The CFU doesn't matter to me as much as that you take a probiotic that is alive and viable.

Drug Muggers of Beneficial Bacteria

This list could fill a book. Pretty much anything that goes into your mouth (meaning processed foods, alcohol and medications) can destroy the gut flora so to save space I am just summarizing. Consider probiotic replenishment the foundation of getting better. Take a high-quality brand to strengthen your immune system and to help you digest all the other foods and vitamins that you take each day.

Acid Blockers

All

Antacids

All

Antibiotics

All

Antivirals

All

Hormone Replacement Therapy/Oral Contraceptives

Estrogen containing drugs

OTC Medicines

Virtually all

Prescription Medicines

*Virtually all

SERMs (medications used for breast cancer which modify estrogen levels)

Sulfonamides

Sulfa antibiotics

Some diabetes medications

MISC:

Estrogen dominance

Many herbal products that disrupt integrity in the GI tract

Nutrients like prescription-strength folic acid, Lovaza, Nephro-vite, and prenatals

Vitamin K (phylloquinone) found in some multivitamins

*The drug muggers list would take a hundred pages if I were to list all of them.

Probiotics: Put This on Your Plate

In most chapters so far I have offered a list of foods, but with probiotics it's a little more complicated. Allow me to share with you a couple of the most important foods to add to your diet—kombucha tea and kefir.

Drinking kombucha (kombu) tea is a new health craze. Some health food stores carry it or can order it for you. It's almost like drinking vinegar or sparkling apple cider to me. You get used to the taste, and some brands taste really good. It's fermented tea (*Camellia sinensis*), and it's superpacked with probiotics. I think kombucha is a notch up from kefir because it also contains some healthy organic acids, vitamins, minerals, and enzymes. It contains all the B vitamins, which give you energy and help you process fats and carbs. It also contains vitamin C, a strong immune system booster.

Research has shown that kombucha may have antibiotic-like effects against harmful bacteria (like *E. coli*) and dangerous fungi. If you have *C. albicans* or multiple allergies, I would pass on this drink because we can't predict how you will react to the multitude of various bacteria and yeasts in kombucha. Others can drink it anytime, but be warned, it can spark energy. That's a good thing.

Kefir is a sort of fermented milk. As you just saw with kombucha, fermented foods can be good for us. Think of it as liquid yogurt. It contains enzymes and lots of friendly microorganisms to help the ecosystem of your gut thrive. Drink kefir on an empty stomach any time of day.

Speaking of yogurt, you probably already know that the right kind of yogurt is replete with healthy, friendly bacteria. What's the right kind? Preferably one that's homemade or

from the farmer's market. Store-bought yogurt sometimes contains beneficial bacteria, but it also may contain additives or colorants. Many of these products are laden with sugar and candylike toppings. That very likely means that the probiotics inside will be rendered useless. That's because fruit additives and sweeteners may kill off the bacteria after the product has been on the shelf. If you want fruit on your yogurt, it's better to wash fresh organic blueberries or strawberries and put them there yourself.

Store-bought yogurt is okay as long as it says "live active cultures" and is plain—no artificial sweeteners, sugar, colors, candy, or added fruits. I really hesitate to recommend manufactured yogurt because I know that you will go straight to the store and buy yourself a great big tub of Double Dutch Brownie Caramel Fudge Banana Split Yogurt with sprinkles on top. I really want you to buy it plain, which is important because you want your yogurt to contain living cultures of probiotic strains, not dead bacteria that have been killed off by all the sugar and flavorings, not to mention pasteurization, which also kills off those live active cultures. Let's not go there today. Trust me on this. Plain yogurt is better than processed kinds, and supplements are a step up from that. I'd prefer that you buy plain yogurt or kefir since these are sure to contain live active cultures that actually are alive. Sauerkraut, preferably organic and raw, is another healthy choice.

An Absurdly Inexpensive Way to Feel Better

For general health: 10–40 billion CFU per day, on an empty stomach. Take it 4 hours away from medicine and 2 hours away from food if possible. Many people find that taking it at bedtime works best.

Drug mugger dose: Take probiotics one to three times daily on an empty stomach.

Just So You Know

It's virtually impossible to overdose on probiotics, but you may be getting too much if you start to develop gas or other intestinal symptoms. Remember, these supplements are supposed to relieve intestinal problems, not cause them. If you experience any discomfort at all, it may be related to a die-off reaction of the bad bugs. It shouldn't last more than 3 days. Not all brands are created equal, and some contain starch, gluten, fillers, and prebiotics, which may be upsetting to a few sensitive people. Prebiotics are different from probiotics. They are basically just food for the probiotics, or beneficial bacteria. Prebiotics are nondigestible substances that stimulate the growth of certain bacterial flora species such as bifidobacteria and lactobacilli. Probiotics flourish in the presence of prebiotics, so some supplements combine the two. That said, some people are sensitive to this additive and get sicker from the combo. This discomfort is the result of your taking a probiotic that contains microorganisms that are not natural to your own camp. If you recall, at the outset of this chapter, I said that each human has a unique fingerprint of flora. So when you take a probiotic that is perceived as foreign to your own individual camp, your immune system wakes up and starts attacking your body to get rid of these new and "dangerous" gut bugs. This is why it's best to take probiotics (and prebiotics) that allow your own camp to flourish. It's better than taking a smorgasbord of foreign gut bugs. Dr. Ohhira's brand is a good choice if this is a concern for you. (See [What's in My Cupboard?](#) on page 230.) Some examples of prebiotics you might see on a formula label include: lactulose, lactitol oligofructose (and sc-FOS), inulin, galactooligosaccharides (GOS), tagatose, isomaltooligosaccharides, polydextrose, and digestion-resistant maltodextrin.

Install a Nutrient Security System

Most consumers think that taking a probiotic is all they need to do, and they just randomly pick any one of dozens on the store shelf. But the bacterial strain matters because you have a flora fingerprint. Certain strains are more helpful than others at beating particular issues, so learn to be choosier if you want to

install a good security system for your body. More specifically, if you are trying to prevent allergic responses and asthma attacks, then *L. reuteri* has been shown to help. If you are riddled with *C. albicans* or gut dysbiosis and get yeast infections all the time, then perhaps the friendly yeast *Saccharomyces boulardii* is your best bet. *S. boulardii* is also strongly recommended for preventing antibiotic-associated diarrhea and traveler's diarrhea, according to a review article published in the *World Journal of Gastroenterology* in 2010. And if *Helicobacter pylori* (known to cause ulcers) is your problem bug, then products containing *L. salivarius* could help. And if you have an autoimmune disorder, your best probiotic might be Nutrex Hawaii's Spirulina Pacifica or Dr. Ohhira's brand.

What's in My Cupboard?

Probiotic supplements should be purchased with care because if you're not taking live active cultures, you may not be getting the very best effect, although some Israeli research suggests that even carcasses of dead lactic acid bacteria are beneficial in certain persons. Probiotic supplements are very fussy. They're sort of fragile because they are so sensitive to heat, light, oxygen level, and loud noise.

So Delicious Coconut Milk Yogurt by Turtle Mountain: It's in my fridge because it's dairy free and soy free and really yummy. The company does not use artificial sweeteners or artificial colors. It contains six live and active cultures including *L. bulgaricus*, *S. thermophilus*, *L. plantarum*, and others. I don't rely on this for my probiotic supplementation, though.

Pro-Bio by Enzymedica: I often recommend the Enzymedica line because they are high-quality supplements with no fillers. This enteric-coated product contains various strains of probiotics that are guaranteed potent at room temperature (many supplements require refrigeration). The capsules are small and easy to swallow. One of the strains in Pro-Bio is *Bacillus subtilis*, which is the source of an enzyme, nattokinase, that supports heart health and circulation. It is one

of the most useful heart-healthy strains in the world and can also improve intestinal flora. The other living strains in this brand improve immune function, digestion, and detoxification, and help you manufacture essential enzymes and vitamins. It is sold at health food stores nationwide, or visit www.enzymedica.com.

Dr. Ohhira's Probiotics 12 Plus by Essential Formulas: This product was developed by a Japanese microbiologist and his team. It contains a synergistic blend of living beneficial bacteria along with amino acids, vitamins, minerals, organic acids, and bacteriocins. The beneficial bacteria remain with their original food source to stimulate growth and create the perfect environment for your own beneficial bacteria—what I call your flora fingerprint. Dr. Ohhira's probiotics are safe for the entire family, although the dosage changes from children to adults. The product is vegetarian and never genetically modified. It is free of gluten, soy, and dairy.

Primal Defense HSO Probiotic Formula by Garden of Life: This is Jordan Rubin's whole food blend of probiotics. He is the author of *The Maker's Diet*. This brand contains the nutrients and beneficial bacteria that you would normally get from healthy soils, those that are untouched by pesticides, herbicides, and other chemicals. The product contains 14 species of hardy, nondairy organisms that survive stomach acid and bile.

***Saccharomyces boulardii* by NutriCology:** This particular brand of *S. boulardii* is found in the fridge in most health food stores. This company has a lot of integrity. Its product is very pure and may be an excellent addition to any probiotic supplementation because it is a yeast and we need friendly yeast, too. *S. boulardii* has nothing to do with *C. albicans* strains. In fact, this dietary supplement can help you beat *C. albicans* infections by running them out of the house. It has been extensively studied and found to support gastrointestinal health and to increase secretory IgA, which improves immunity. There are no preservatives or diluents in this brand, and it's hypoallergenic.

Probiotic All-Flora by New Chapter: This product is organic and contains nine strains of live probiotics cultured together on a nondairy, whole food base. The makers combine the live bacteria with growth-promoting prebiotics to feed the probiotics so they work better. The prebiotics come from organic apples and organic inulin sourced from Jerusalem artichokes. The bacteria strains in this blend provide billions of units per dosage; the strains used are *S. thermophilus*, *L. rhamnosus*, *Bacillus breve*, *L. acidophilus*, *Bacillus infantis*, *B. longum*, *L. plantarum*, *L. salivarius*, and *L. helveticus*. The product is gluten free, but it does contain fermented soy and fish.

Kyo-Dophilus Probiotics Plus Enzymes by Kyolic: This product is used in thousands of hospitals and university research centers. Kyolic manufactures this high-quality product from three specially cultured, nondairy, heat-stable strains of friendly bacteria. The trio survives stomach acid. I really like the fact that this product does not require refrigeration for stability, as many probiotics do. This supplement provides digestive enzymes to help you break down your meals, in addition to the probiotics. It could be helpful for people with nonspecific digestive problems. It contains *L. acidophilus*, *Bifidobacterium bifidum*, and *Bifidobacterium longum*.

Spirulina Pacifica by Nutrex Hawaii: Spirulina contains a host of naturally occurring probiotics that will also help you manufacture your own.

Pyridoxine (Vitamin B₆)

Pyridoxine makes us happy! Also known as vitamin B₆, this nutrient is really important when it comes to boosting your mood, improving your sleep, and nourishing your entire nervous system. It accomplishes all this because it boosts levels of serotonin, GABA, and dopamine, all three of which are happy brain chemicals that support healthy mood, relaxation, and sleep. In fact, pyridoxine is one of the most important B vitamins in the body because it also helps you make red blood cells and create energy. If you've been diagnosed with iron deficiency anemia, there's a good chance that your anemia could be related to a vitamin B₆ deficiency, not a true iron deficiency, as is sometimes mistakenly thought.

Vitamin B₆ also nourishes your nerves. Ironically, too much of it can damage the nerves. This nutrient is often recommended for peripheral neuropathy, the nerve damage associated with diabetes and shingles. Sometimes it is recommended (along with physical therapy) for carpal tunnel syndrome, the painful wrist condition that can develop in people doing jobs that require repetitive motion.

Pyridoxine's therapeutic benefits do not stop there. Vitamin B₆ is so good at soothing the nerves and the entire central nervous system that some physicians recommend it for women with strong PMS symptoms and tearfulness around the time of their periods. I often recommend it for PMS, and many of my clients report that their breast tenderness is relieved and their mood improved.

If you would like to give pyridoxine's PMS-relieving benefits a try, research suggests taking a dose of about 50 to 100 mg of vitamin B₆ per day for 2 weeks before your menses is to begin. If fibrocystic breast pain is an issue for you, I can't help but mention that both natural progesterone cream and iodine supplements are used to relieve that. These supplements

may reduce your risk for breast cancer if they are dosed properly and good-quality supplements are used. These are sold over the counter at health food stores.

Scientific studies support pyridoxine's role in breast health. There are several reasons that I've reached that conclusion. The most obvious is that vitamin B₆ helps reduce homocysteine, a known cancer-causing chemical in the body. High homocysteine is known to contribute to the formation of estrogen-induced breast cancer and most other cancers, if not all. In 2003, Harvard researchers published a study in *Journal of the National Cancer Institute* that concluded that a diet high in vitamin B₆ (and folate) could offer some protection against breast cancer. This didn't surprise me. After all, these B vitamins help make DNA, your basic genetic code. The study followed 121,700 females (nurses, actually) and looked at lifestyle risk factors from 1976 to 2003. Of the 712 nurses who developed breast cancer, researchers found that women with a higher intake of vitamin B₆ and higher blood levels of this vitamin had a lower incidence of breast cancer.

Our sex hormones estrogen, progesterone, and testosterone are kept in check by vitamin B₆ (and folate). This means that they are less likely to exert excessive or toxic effects in the presence of sufficient vitamin B₆. Your vitamin B₆ status plays an important role in preventing diseases driven by these hormones, such as breast and prostate cancer. If you want to learn how to protect yourself from these conditions, please refer to my e-book *Breast Cancer Protection* available on my Web site, www.DearPharmacist.com. It is only about 50 pages long, but it's extremely comprehensive. Taking vitamin B₆ is just one of many ways you can reduce risk.

Vitamin B₆ also indirectly protects the heart by lowering the homocysteine level. Homocysteine damages arteries feeding the heart, making it easier for blood to clump together into clots and clog up the arteries. Vitamin B₆ is critical for anyone facing heart disease or atherosclerosis.

Drug muggers that rob this nutrient leave you more susceptible to heart disease. Love a good steak several times a

week? Listen up, because vitamin B₆ is needed to break down protein found in meats and dairy products. The more animal protein you consume, the more vitamin B₆ you should take.

Pyridoxine is water soluble, so it gets into many water-based cells in your body, but not into the fatty tissues. Like other B vitamins, it cannot be stored, so you will need to make sure that you get enough vitamin B₆ on a daily basis whether through foods, supplements, or both.

If you become deficient in this vital nutrient, you could experience weakness, mental confusion, depression, insomnia, or PMS. Pregnant women may experience more nausea as a result of being shy on vitamin B₆.

Like niacin, pyridoxine is a mild tranquilizer, so if you run low, you may feel irritable and nervous or you may not sleep well at night. All this makes you feel even more tired the next day, and of course the insomnia persists. It becomes a vicious cycle.

You may also become anemic if you don't get enough pyridoxine. Remember, vitamin B₆ helps you make red blood cells. Some people who are deficient notice problems with their skin and develop lesions or seborrheic dermatitis. Some also experience mouth pain, tongue sores, or tongue discoloration.

Since B₆ helps you make red blood cells, it makes sense that running low on B₆ could lead to iron deficiency anemia, and that, my friends, is a leading cause of hypothyroidism. Hypothyroidism is a factor in the development of diabetes. So now you may understand why I wrote this book. Replenishing one nutrient can spare you years of suffering and a medication merry-go-round.

Drug Muggers of Pyridoxine (Vitamin B₆)

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Tums, Titalac, Roloids)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (just a few examples)

Amoxicillin (Amoxil, Augmentin) Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Isoniazid (INH)
Levofloxacin (Levaquin)

Lomefloxacin (Maxaquin)

Minocycline (Minocin)

Moxifloxacin (Avelox, Vigamox)

Sulfamethoxazole and trimethoprim (Bactrim Septra)

Tetracycline (Sumycin)

Anticonvulsants

Phenytoin (Phenytek)

Barbiturates

Blood Pressure Drugs

Hydralazine (Apresoline)

ACE inhibitors:

Enalapril and HCTZ (Vaseretic)

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Bronchodilators

Albuterol (Proventil, Ventolin, ProAir HFA)

Albuterol and ipratropium (Combivent)

Cycloserine (Seromycin)

Theophylline (Uniphyl, Slo-bid, Theo-24, or Theo-Dur)

Cardiac Glycoside

Digoxin (Lanoxin, Lanoxicaps, Digitek)

Chelating Agent

Penicillamine (Cuprimine)

Cholesterol Agents

Cholestyramine (Questran)

Colesevelam (Welchol)

Colestipol (Colestid)

Diabetes Medications

Metformin (Fortamet, Glucophage, Glucophage XR, Glumetza, Riomet)

Metformin and sitagliptin (Janumet)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Activella, Climara, CombiPatch, Estraderm, EstroGel, Menostar, and many others)

Esterified estrogens (Estratab)

Estrogen-containing drugs (Estrace, Estring, Femring, Menest)

Estrogens, conjugated (Premphase, Prempro)

Ethinyl estradiol (Ortho-Novum, Triphasil, among others)

Levonorgestrel (found in many birth control pills)

MAO Inhibitor Drugs (See complete list on page [50](#))

Nonsteroidal Anti-inflammatory Drugs, or NSAIDs

(They deplete other nutrients that are required to convert

B₆ to P5P, such as zinc, and they deplete other sister B vitamins like B₁₂ and folic acid, as well as C.)

Aspirin (Bayer, Bufferin)

Diclofenac (Voltaren)

Ibuprofen (Advil, Motrin)

Nabumetone (Relafen)

Naproxen (Aleve, Anaprox, Naprosyn)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Parkinson's Drugs

Levodopa and carbidopa (Sinemet) (separate from B₆ by 4 to 6 hours or ask the doctor about taking a supplement)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

MISC:

Alcohol

Aluminum poisoning

Candida albicans overgrowth

Chelation therapy

Estrogen dominance

Excessive protein intake Riboflavin drug muggers
(since riboflavin is needed to activate B₆)

Zinc deficiency

Zinc drug muggers (since zinc is needed to activate B₆)

Vitamin B₆: Put This on Your Plate

Sprouts, spinach, bell peppers, turnip greens, garlic, yellowfin tuna (baked), cauliflower, mustard greens, beans, bananas, raw celery, cabbage, asparagus, steamed broccoli, turmeric, kale, collard greens, brussels sprouts, watermelon, cod (baked), Swiss chard, and nuts.

An Absurdly Inexpensive Way to Feel Better

The B vitamins are interdependent. In other words, it's very easy to tilt your Bs out of balance. If you take too much pyridoxine, you may become deficient in your other B vitamins. So whenever you take a single B vitamin, it may be wise to take a B complex also so that the other Bs are on board.

For general health: 10–25 mg daily (if you are taking active P5P, then the dose is 5–15 mg daily)

Drug mugging dose: 50 mg once or twice daily (with P5P, the dose is 15–30 mg once or twice daily)

Just So You Know

Because vitamin B₆ is so energizing, I suggest taking it in the morning rather than at night. When a food product at the grocery store says that it's been fortified with vitamin B₆, they have used pyridoxine hydrochloride, the principal type of B₆ found in most supplements. The active, body-ready version is pyridoxal 5'-phosphate (P5P), which is what you get from eating plant-based foods and from converting B₆ in your gut with the help of other micronutrients and minerals.

Taking just a plain vitamin B₆ supplement is fine for most people. The body goes on to activate the nutrient to its usable form, P5P. For that reason, you will not see brands of vitamin B₆ included in my recommended products list. It's widely available and costs pennies per day. The body-ready form of

P5P is a smidgen tougher to find, so I've included only those in my list. I have found you brands that are already activated so you can fully and readily absorb them.

Vitamin B₆ is eliminated through the urine (like the other B vitamins), but it is possible to get too much. Having vivid dreams or nightmares is one sign of excessive vitamin B₆. Other signs include numbness, tingling, and other nerve-related problems in the hands, arms, or legs. Any kind of new neurological symptom could mean you are ingesting too much. You may want to switch brands or back off the dosage if you notice these types of side effects. The best way to supplement with vitamin B₆ is to take little doses throughout the day along with a B complex so you have the full spectrum of Bs on board.

Install a Nutrient Security System

One of the most important things you can do to improve your vitamin B₆ security system is to control yeast production in your gut. I'm thinking mainly of *C. albicans*, but there are dozens of other yeasts that could flourish if your GI tract isn't functioning well. What do yeasts have to do with vitamin B₆? They produce a neurotoxin called acetaldehyde that not only wipes out your vitamin B₆, but also depletes another substance (alpha-ketoglutaric acid) that you need to activate vitamin B₆ to its body-ready form, P5P. To control the yeast beast, minimize sugar consumption, and take healthy probiotics and a friendly yeast called *Saccharomyces boulardii* and, if your doctor approves, a little zinc.

What's in My Cupboard?

Pyridoxal 5-Phosphate by Metabolic Maintenance: This brand delivers B₆ to you in its active, body-ready form so you can readily absorb the nutrient and put it to work. The capsules are free of fillers, preservatives, and allergens.

Pyridoxal 5-Phosphate by Food Science of Vermont: This is pure P5P. It does not require any activation by the liver and

is fully bioavailable in this form. The company offers vegetarian caps with no artificial colors, fillers, or gluten.

B-Complex #6 by Thorne Research: This product contains a full range of B vitamins with higher amounts of P5P. All are also in their active, body-ready forms.

Pyridoxine P5P by Allergy Research Group: This is an allergen-free combination of pyridoxine hydrochloride and P5P (the active form) in case you have trouble activating the pyridoxine. This company specializes in formulating high-quality, allergen-free supplements at affordable prices.

Coenzymated B-6 by Source Naturals: These are sublingual tablets with natural peppermint flavor. This brand allows you to bypass your gut and liver, thereby improving absorption. This product contains the active P5P version of B₆, so it really takes a load off your system in terms of absorbing and activating it. I would suggest this form to recovering alcoholics and to people with yeast issues, liver or pancreatic problems, intestinal malabsorption issues such as celiac or Crohn's disease, or genetic flaws in their ability to activate B₆ to P5P. This is also a good choice for anyone who wants to guarantee better absorption and utilization. It does contain tiny amounts of sorbitol, which some people are sensitive to.

Coenzyme Active B-6 Caps by Country Life: Here's a B₆ product that I'm in love with because each capsule contains 25 mg of active P5P along with 25 mg pyridoxine alpha-ketoglutarate. That last ingredient is a combination of vitamin B₆ and an important biological compound involved in energy production. It's great because your body puts the coenzyme complex to work immediately, directly at the sites of action. Your liver doesn't have to think.

Pyridoxine P5P by NutriCology: This brand offers a high dose of 275 mg per capsule. They split up the contents of the B₆, providing plain pyridoxine hydrochloride and P5P. The advantage to this is that you get a sustained action of sorts because the P5P goes to work right away while your body converts the plain pyridoxine to P5P over the course of a few hours. The dose is rather large, and in my opinion this high-

quality product might best be used short-term to build up levels quickly. Take it for a month unless your doctor says otherwise, or take it several times a week (not daily). And, of course, any time you drive one B vitamin very high, it's best to take it along with a B complex.

Riboflavin (Vitamin B₂)

Have you ever taken a multivitamin and then noticed that your urine was fluorescent yellow a few hours later? It's from the riboflavin (or vitamin B₂). The effect is harmless, but makes for interesting conversation for 12-year-olds. This phenomenon happens because riboflavin is actually a dye. Its Latin-based name is derived from *ribose*, which means sugar, and *flavus*, which means yellow. In fact, it's used as a colorant in some foods, including baby food, cheese, and cereal. When used this way, it is called E101; the "E" stands for Europe. Because riboflavin really is fluorescent (!) under ultraviolet light, engineers in various industries use it to detect leaks. Don't worry, though, you won't glow in the dark if it's in your system. In fact, it's vital.

As a B vitamin, riboflavin works in concert with the other Bs. It plays a role in your body's creation of energy. Riboflavin supports mitochondrial function. Remember that mitochondria are the tiny powerhouses in each of your cells that create energy from the ATP molecule. Riboflavin also works hard to improve thyroid hormone levels, and that in turn affects metabolism, helping you burn calories. If you already have hypothyroidism (low thyroid hormone), you have a problem converting your riboflavin into a usable form that works for you, so talk to your doctor about taking more of this important B vitamin.

This nutrient also protects your nerves and helps you cope with life if you eat stress for breakfast, lunch, and dinner. It's also helpful if you grind your teeth. Seriously, tooth grinding can occur in people who are stressed out and riboflavin deficient. The reason it works so effectively in this case is because this B vitamin makes your adrenal glands function better and produce antistress hormones that help you cope with whatever is going on in your life.

Riboflavin is needed to make the nutrient glutathione, a powerful free radical scavenger. In fact, a doctor can measure glutathione reductase activity in your red blood cells to assess your riboflavin nutritional status. Another way to do this is by testing micronutrients. Women are especially at risk of running low because the many drug muggers of riboflavin include estrogen-containing drugs such as oral contraceptives and hormone replacement therapy.

Riboflavin is great for tired or overweight women, especially those who have migraines, too. This is incredible because millions of dollars are spent on migraine medications that only help temporarily and never solve the problem. One way we think riboflavin works is by supporting mitochondrial function in the brain. Your mitochondria can also be called your powerhouses because they generate energy and burn fat and sugar. Riboflavin is the precursor to two important coenzymes—FAD (flavin adenine dinucleotide) and FMN (flavin mononucleotide). When shopping for riboflavin, you often see references to these two compounds, so get familiar with them. They are life sustaining and absolutely essential in powering the energy-producing mitochondrial chain of events, or what is called the electron transport chain. In other words, the party can't get started producing energy unless enough riboflavin is present and can morph into FAD and FMN. A deficiency of riboflavin starves the brain of oxygen and energy. That's when the migraine pain sets in and you have to call your boss and tell him or her you're down for the count.

Medical science has known about the potential benefits of riboflavin as a treatment for migraines for quite some time. Back in 1998 a randomized, placebo-controlled trial looked at the B vitamin's effect on people who frequently suffered with migraines. Researchers gave the participants 400 mg of riboflavin every day for 3 months. The scientists concluded that riboflavin was significantly better than placebo in reducing the number of headaches, though it took almost 3 months for optimal benefits.

Another study published in the 2004 issue of the *European Journal of Neurology* also found that riboflavin helped decrease the frequency of migraines. The aim of this study was

to investigate riboflavin's preventive powers. Participants were given 400 mg of riboflavin per day, and researchers evaluated headache frequency, duration, and intensity, and the need for antimigraine drugs. After 6 months, headache frequency was cut in half and the need for drugs also decreased from 7 pills to an average of 4.5 pills per month. Researchers concluded that "riboflavin is a safe and well-tolerated alternative in migraine prophylaxis."

There are few things worse than chronic head pain. After all, your head is your motherboard, so if this little tidbit of information helps you get your life back, then I'm totally tickled! Riboflavin is cheap and easy to find anywhere. The only thing to remember is that if you take too much of one B vitamin, you tilt your Bs out of balance and can develop a relative deficiency of the others. Taking a B complex may be necessary while you drive up your level of riboflavin. Be sure to read the other chapters about the rest of the B vitamins, too, because you want to be aware of the symptoms of any vitamin deficiency, just in case it happens.

Migraines do seem to occur more frequently in people who are deficient in riboflavin. I recall telling this little secret to a woman named Alice at the pharmacy one evening as I was filling her prescription for Imitrex (sumatriptan), a medication that helps relieve migraines. I suggested riboflavin. Alice took my advice and immediately purchased a bottle. I also told her to stop drinking diet sodas because they contain artificial sweeteners, some of which have been associated with headaches in some people.

Soon after, I received an e-mail from Alice expressing gratitude. For the first time in 7 years, she had gone 6 days in a row without a headache, and she felt more energetic. In her words: "I can now fully enjoy my life again. I feel like I am getting to know my children again after all these years. I can focus on them and play with them, and it is all because of you."

It is really gratifying to help people, and it is wonderful to know that this woman no longer needs to fill her Imitrex prescription every month.

The benefits of riboflavin do not stop there, however. Riboflavin (and biotin) help create luxurious hair, pretty skin, and strong nails. Pregnant women may derive benefit from added riboflavin because it helps the developing fetus grow properly and it prevents pregnancy cramps. A deficiency of riboflavin during pregnancy can increase the risk of preeclampsia fivefold. Preeclampsia occurs in 5 to 8 percent of pregnant women and causes high blood pressure in both mom and baby. Riboflavin is found in prenatal vitamins because it may help prevent the condition. Make sure your formula contains it; you can ask your pharmacist. You can also ask your obstetrician-gynecologist whether you need additional riboflavin, more than is already in your prescribed formula.

Your body needs riboflavin to help digest foods and activate other B vitamins, such as B₆ and niacin. If you're a big meat eater, you need extra riboflavin to digest the fat and protein in your meals. Riboflavin helps make red blood cells, so if you run out of riboflavin, you may subsequently develop iron deficiency anemia and become fatigued. This is superbly interesting to me because I have known so many people who are iron deficient and can't get better even after taking iron supplements for months and months. I've learned that they either have leaky guts (and can't absorb the supplements from the gut) or, and this is the biggie, they are riboflavin deficient! So listen carefully if you find that you are the poster child for iron deficiency or you know for sure that you have trouble absorbing iron. You should ask your doctor if you can take the higher dosage (like the drug mugger dose) of riboflavin I recommend below, along with your iron supplement.

You don't often hear of riboflavin deficiency because the symptoms are hard to pin down and easy to cover up with medication. For example, some people have a decreased sensitivity to touch, temperature, vibration, or position that may occur in the hands, legs, or feet. It may be very subtle and fly under the radar because they just accept their bizarre circumstances (which cause no pain). Riboflavin deficiency is fairly common in elderly people and in those with anorexia, bulimia, HIV, inflammatory bowel disorders, chronic diarrhea, celiac disease, diabetes, and heart disease. And, of course, if

you push other B vitamins, then you can get a relative deficiency of riboflavin (which can also go unnoticed for months or years).

If you have watery, fatigued, or bloodshot eyes (and it's not because you're up late writing books!), it's possible that you are just short on riboflavin. Riboflavin deficiency can cause tearing, itching, or burning in or around the eyes; blurred vision; and sensitivity to light. If you have a deficiency, people might assume you are hung over or exhausted because your eyes look so bloodshot.

The skin is also affected by riboflavin deficiency. People with a deficiency can develop sores on the tongue or the corners of their lips, which could crack. Their skin may start to dry out or peel, and this can occur anywhere. Redness and rash are very common with a riboflavin deficiency. A rash can sometimes occur in the most unfortunate places, like the groin. Some people use riboflavin supplements to ease rosacea, as it helps prevent pustule formation by improving the skin's tone and secretions.

Drug Muggers of Riboflavin (Vitamin B₂)

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Ranitidine (Zantac)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Tums, Titalac, Rolaid)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (all of them, just a few examples here)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Bactrim Septra)

Anticonvulsants

Phenobarbital (Solfoton)

Antidepressants, Tricyclic

Amitriptyline (Elavil)

Desipramine (Norpramin)

Doxepin (Sinequan)

Imipramine (Tofranil)

Nortriptyline (Pamelor)

Antimetabolites

Methotrexate (Rheumatrex, Trexall)

Antinausea Drugs

Promethazine (Phenergan)

Antivirals

Delavirdine (Rescriptor)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, potassium-sparing: diuretics (possibly, however this is not conclusive)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Cancer Drugs

Doxorubicin (Adriamycin)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Estrace, Climara, Estraderm, Estring, Activella, Femring, CombiPatch, EstroGel, Menostar, and many others)

Estradiol and testosterone (Estratest, Depo-Testadiol)

Estrogen-containing drugs, such as oral contraceptives

Estrogens, conjugated (Premphase, Prempro)

Ethinyl estradiol (found in many birth control pills)

Levonorgestrel (found in many birth control pills and Plan B)

Norethindrone (found in many birth control pills)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

Psychiatric Drugs

Chlorpromazine (Thorazine)

Fluphenazine (Prolixin)

Haloperidol (Haldol)

Thioridazine (Mellaril)

Trifluoperazine (Stelazine)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides

MISC:

Alcohol

Anorexia

Estrogen dominance

High dosages of any other B vitamins

Riboflavin: Put This on Your Plate

Dairy products, lean meats, beef liver, crimini mushrooms, spinach, asparagus, Swiss chard, mustard greens, broccoli, collard greens, turnip greens, eggs, whole grains, yogurt, green beans, cabbage, strawberries, cauliflower, goat's milk, raspberries, brussels sprouts, summer squash, tempeh, plums, soybeans (cooked), and almonds.

An Absurdly Inexpensive Way to Feel Better

Unless advised otherwise by your health-care provider, you'll want to get the following doses as part of a B complex supplement. B vitamins work together, and it's easy to tip them out of balance by taking supplements of individual Bs.

For general health: R5P (riboflavin 5'-phosphate): 50–200 mg per day

Drug mugger dose: 200–400 mg per day

Migraines: Usually 200 mg twice daily for 60 days, then reduce to maintenance level of 25–50 mg daily

Just So You Know

Riboflavin may be taken without regard to meals, but most people take their B vitamins with food to maximize absorption and minimize tummy upset. If you enjoy strenuous exercise or have a lot of stress in your life, you will probably need a higher amount than the average person. If you have a genetic polymorphism (a defect of sorts) that prevents you from activating riboflavin to its bioavailable form (R5P), then you'll need to take the active form of this nutrient. You can get genetically tested if you suspect you have this genetic defect. Vitamins you buy in the store aren't active until your body

carries out a few chemical reactions on them. Polymorphism prevents this simple process. I'm telling you this because when you buy riboflavin (or CoQ10, pyridoxine, or folic acid), you have two choices. You can buy these nutrients and have your body convert them for you, or you can buy the body-ready form (usually at a lower dose than the precursor). You saw an example of this in Chapter 8 on CoQ10. CoQ10 is widely available, and so is its active body-ready version, ubiquinol. Similarly, when riboflavin is activated in your body, it becomes R5P; you can buy supplements in this activated form.

Riboflavin also helps vision, but taking too much of it could backfire and cause cataracts or poor nighttime vision. Other possible reactions to high doses of riboflavin may include itching, numbness, burning, prickly sensations, and sensitivity to light.

Install a Nutrient Security System

Riboflavin is activated to R5P in the intestines, where it is then absorbed, so having a healthy gut goes a long way toward improving and maintaining your level of this important B vitamin. Probiotic supplements can help keep your gut in a healthy state. In addition, you can't activate riboflavin to R5P without sufficient amounts of digestive acid, which is sold in supplemental form at health food stores (look for betaine hydrochloride or trimethylglycine). You can find out if you make enough stomach acid with a gastrin test, which is a blood test. For more information, see Chapter 17, Probiotics, on page 221.

What's in My Cupboard?

The B vitamins are interdependent, and it's very easy to tilt your Bs out of balance. If you take too much riboflavin, you may become deficient, so to speak, in your other B vitamins. So whenever you take a single B vitamin, it's wise to also take a B complex so that the other Bs are on board.

B-2 by Source Naturals: These hypoallergenic tablets contain 100 mg of riboflavin. The product is easy to find at health food stores.

B-2 by NOW: This formula offers 100 mg riboflavin in an easy-to-swallow capsule. It is also easy to find at health food stores.

Riboflavin 5' Phosphate by Thorne Research: This is activated riboflavin! If you take this product, your body doesn't have to expend energy to convert plain riboflavin into R5P. The nutrient is instantly bioavailable. This matters for many people who have digestive disorders, take a lot of medicine, or don't have enough acid or normal flora in their intestinal tracts.

Riboflavin-5-Phosphate by Douglas Labs: This, too, is activated riboflavin. This product is sold through your health-care practitioner; it is not found in health food stores or pharmacies. You can search online or have your doctor fax his or her license to Douglas Labs to order it for you.

B-2 by Bluebonnet: This product offers 100 mg riboflavin. It is kosher and free of sugar and allergens such as milk, eggs, fish, wheat, soy, corn, and gluten.

Vitamin B2 by Solgar: These vegicaps are kosher and free of all allergens. This brand is widely available.

Migra-Eeze by Life Extension: This multitasking formula contains a powerful blend of herbs and vitamins designed to help with headaches. Two softgels contain 400 mg riboflavin (some of which is in the body-ready R5P form), along with butterbur and ginger, two herbs known to help reduce the frequency and pain of migraine headaches. This product is free of milk, egg, fish, peanuts, crustaceans, shellfish (lobster, crab, shrimp), tree nuts, wheat, yeast, gluten, corn, rice, and artificial sweeteners, flavors, colors, and preservatives. It is sold online at www.vitacost.com and www.lifeextension.com.

Selenium

Selenium is a trace mineral most commonly known for its role in the thyroid gland. As you probably know, thyroid hormone helps regulate your metabolism, which means it has a great impact on your weight, your energy level, and your mood. A happy thyroid equals a happy person. And a skinny person, too. But the role of selenium does not stop there. A selenium deficiency can lead to heart disease, macular degeneration, cataracts, exhaustion, poor immune function, and frequent infections. A selenium deficiency can also make for a poor ratio of HDL to LDL cholesterol. It protects and boosts your immune system by increasing the number of helpful cells that fight off pathogens while suppressing inflammatory, pain-causing chemicals. And just like its cousin zinc, selenium protects the prostate gland, improves sperm count, and helps men with fertility problems.

The recommended daily amount set by the FDA is 70 mcg, but based on numerous studies, I feel that a little bit more might be beneficial, especially for people with thyroid problems or poor immune function. Some studies show lower rates of cancer, heart disease, and thyroid disease in people who have healthy levels of selenium. It also appears that people with rheumatoid arthritis who have lower selenium levels tend to experience more pain, stiffness, inflammation, swelling, and loss of mobility in their joints. People with digestive tract problems such as celiac or Crohn's disease or irritable bowel syndrome tend to run out of this mineral quickly.

A number of studies have pointed to the role of selenium in thyroid disease. No surprise there, as the human thyroid gland has the highest concentration of selenium per gram of tissue of all the organs. Most people don't realize this, but our bodies require selenium to produce the powerful antioxidant glutathione. The body has trouble making the enzyme glutathione peroxidase without selenium on board, and this

enzyme protects your body from harm by neutralizing dangerous inflammatory and cancer-causing chemicals that act like bullets in the body. This explains why selenium is so helpful to the immune system. It nourishes your thyroid gland and produces chemicals that do good housekeeping on your cells.

Many autoimmune thyroid disorders worsen in the presence of low selenium. When the immune system mistakenly attacks the thyroid gland, a condition known as Hashimoto's disease may result. In this autoimmune form of hypothyroidism, the thyroid gland is slowly destroyed by a person's own immune system. Your doctor will measure your thyroid peroxidase (TPO) antibodies; the higher they are, the more destruction is occurring. Studies show that people with Hashimoto's, who have high TPO antibodies, can benefit from selenium (as well as a gluten-free diet). Supplementing with about 200 mcg of selenium each morning for 3 months could significantly lower antibodies that attack the thyroid gland. One study published in the *Journal of Clinical Endocrinology and Metabolism* in 2002 found that in regions with higher incidences of selenium deficiency, more thyroiditis was occurring. This is because less selenium in the body translated into less glutathione peroxidase (the cleanup crew). The researchers said: "even mild selenium deficiency may contribute to the development and maintenance of autoimmune thyroid diseases."

Selenium is a strong antioxidant that is often employed in treating cancer. Some studies indicate that death rates from lung, colon, rectal, and prostate cancers are lower among people with higher selenium intake. But not all studies regarding selenium and cancer are positive. In January 2009 in the *Journal of the American Medical Association*, for example, researchers published their data on a high-profile cancer study called SELECT, which stands for Selenium and Vitamin E Cancer Prevention Trial. They found no apparent difference in prostate cancer risk between groups of people who supplemented daily either with selenium, vitamin E, both, or placebo. But how strong a conclusion can one draw when this research had so many limitations? For example, they could have used a better form of selenium that had shown clinical

benefit in prior trials. They also could have enrolled subjects who were relatively deficient in selenium rather than subjects with normal or higher baseline values. The conclusion is fuzzy from where I sit.

The bottom line is that if you want to take selenium, follow the directions on the label, which usually call for 100 to 200 mcg per day, and if you are dealing with something serious like Hashimoto's, a drug mugging effect, or even pain from pancreatitis, ask your doctor about taking higher dosages, about 400 to 600 mcg per day for a short while (a few months). Selenium seems to be able to block the growth of blood vessels that tumors need for their food supply. So it is able to starve a tumor to death. If you're being treated for cancer, you should discuss selenium supplements with your physician.

It's worth emphasizing that selenium is a powerful immune system booster. People who become deficient in selenium have lower resistance to infections, including viruses. This was shown in a small study done at the University of Liverpool in 2004 that concluded that increased selenium intake helped people clear poliovirus from their systems. I realize that polio and swine flu are completely different infections, but my point is that selenium can increase production of infection-fighting cells (like natural killer cells, which attack cancer, and infection-fighting T cells) and help people fight infections that cause shingles, cold sores, and other types of herpesvirus symptoms, so why not the flu?

A study published in the *Journal of Infectious Diseases* in 2000 looked at selenium's role in people with HIV and concluded that the trace mineral could increase useful immune system chemicals like interleukin-2 while down-regulating (or calming down) the production of neurotoxic chemicals like interleukin-8 and tumor necrosis factor-alpha. In other words, selenium can provide significant protection for people with HIV. Pretty major stuff for one little micronutrient! Bottom line: If you have HIV, it's worth asking your doctor about taking a selenium supplement.

What's important here is that selenium appears to help your body defend itself rather well no matter what kind of challenges your immune system faces.

A more recent article elaborated on the use of selenium and other antioxidant supplements (such as resveratrol, vitamin E, and NAC/glutathione) and their effect on the pandemic virus H5N1, also called bird or avian flu. The authors, who published their findings in 2006 in *Medical Hypotheses*, concluded:

Key mediators in these processes include selenium, vitamin E, NAC/glutathione, resveratrol, and quercetin. Taken prophylactically, and throughout the duration and recovery of an H5N1 infection, the nutritional supplement formula may aid humans infected with H5N1 influenza to survive with a reduced likelihood of major complications, and may provide a relatively low-cost strategy for individuals as well as government, public-health, medical, health-insurance, and corporate organizations to prepare more prudently for an H5N1 pandemic. Some evidence also indicates that the supplement formulation [the authors describe] may be effective as an adjunctive to H5N1 vaccine and anti-viral treatments, and should be tested as such.

These authors are suggesting that a handful of inexpensive nutrients, including selenium, might help some people fend off a pandemic virus. Since swine flu contains some genetic material derived from the bird flu, it stands to reason that selenium could play a role in helping protect people from that virus as well should it ever be revived. Thankfully, by spring 2010, the swine flu blew over, and we apparently won't have to worry too much about that anymore, but other infectious organisms abound. I'm certainly not going to wait for yet another study to tell me that selenium is helpful to my immune system. I'm just going to go ahead and take it. Because I'm relatively healthy and I don't take medications, I take only one bottle of selenium supplements a year, starting in the fall. I don't take the whole bottle at once, of course. I take 1 capsule (200 mcg) daily until the bottle is empty.

Protection against infectious agents is just the tip of the iceberg in what taking a selenium supplement might offer you. If you run low on selenium, you will have more fatigue; a higher level of LDL cholesterol; sticky, thick blood; and mental fatigue, anxiety, and depression. Because it is such a strong antioxidant and can sweep up free radicals, selenium is recommended for people with any kind of cell damage.

I read a National Health and Nutrition Examination Survey that concluded that most Americans obtain adequate selenium from their diets. I disagree. You may not realize this, but we used to get a lot more selenium in our diets than we do now. That's because selenium (and many other important minerals) used to be found in plentiful supply in the soils used to grow our foods. But as a result of industrialization, the use of chemicals and pesticides, and other factors, our soils have become virtually barren of many life-sustaining minerals, including selenium. Because of this, it's possible to run low even if you don't take a drug mugger on the list below.

Drug Muggers of Selenium

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Tums, Titalac, Rolaid)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

**Antidepressants including tricyclic and SSRI
medicines** (a few examples)

Amitriptyline (Elavil)
Desipramine (Norpramin)
Fluoxetine (Prozac)
Nortriptyline (Pamelor)
Paroxetine (Paxil)
Sertraline (Zoloft)
Trazodone (Desyrel)

Corticosteroids (all of them)

Betamethasone (Diprolene, Luxiq)
Cortisone (Cortone Acetate)
Dexamethasone (Decadron)
Fluocinolone (Synalar topical)
Halobetasol (Ultravate topical)
Mometasone (Elocon)
Methylprednisolone (Medrol)
Prednisolone (Pediapred and Orapred liquid)
Triamcinolone (Aristocort)

Inhaled corticosteroids:

Budesonide (Rhinocort)
Flunisolide (Nasacort, Nasalide, Nasarel)
Fluticasone (Flonase)

Fluticasone and salmeterol (Advair)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Estrace, Climara, Estraderm, Estring, Activella, Femring, CombiPatch, EstroGel, Menostar, and many others)

Estrogen-containing drugs (hormone replacement therapy and birth control)

Estrogens, conjugated (Prempro, Premphase)

Ethinyl estradiol (found in many birth control pills)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides (Sulfa antibiotics, indapamide, and some diabetes medications, but this is just a hunch since this class of drugs is known to deplete many other minerals)

MISC:

Alcohol

Burn victims are at risk for selenium (and vitamin E) depletions

Celiac or Crohn's disease or IBS

Estrogen dominance

Gastric bypass

Gluten-free diet

Heavy metal toxicity (Likely all heavy metals but these for sure) Cadmium burden (which occurs from smoking)

Mercury burden (which occurs from certain seafood, environmental chemicals, and amalgams)

Selenium: Put This on Your Plate

Food sources include walnuts, tuna, swordfish, herring, shrimp, mollusks, soybeans, corn, wheat, rice, chicken, eggs, cheese, turkey, beef, oatmeal, and vegetables. Brazil nuts have the highest concentration of selenium per gram, so eat a small handful each day.

An Absurdly Inexpensive Way to Feel Better

For general health: Selenium citrate or picolinate: 100 mcg once daily

Drug mugger dose: 100–200 mcg one to three times daily

Just So You Know

Selenium may be taken throughout the day, but if you take it once a day (rather than two or three times), then go ahead and take it in the morning so it can get to work and make some energizing thyroid hormone for you. The forms above are just fine, though some experts feel that when selenium is bound to an amino acid, it has a slight edge in terms of absorption. If you want that form, look for either selenomethionine or selenocysteine. Selenomethionine is an organic form of selenium and is easier to absorb than inorganic selenite forms. In fact, a clinical trial found that selenomethionine is absorbed almost 20 percent better than selenite.

Selenomethionine is the natural way selenium exists in food, so it is my preference. Another version, which is bound to a yeast, is also highly bioavailable. You'll find it listed on labels as "high selenium yeast" or "Seleno-Excell." Bear in mind that selenized yeast is really just brewer's yeast that has been grown in selenium-rich broth and then turned into a selenium supplement. It's fine to take, but it probably has gluten in it no

matter what the label states. That's because gluten is found in virtually all forms of brewer's yeast.

Selenium doses of greater than 300 to 500 mcg daily can be harmful for some people because they spark production of too much thyroid hormone. You know you are getting too much selenium if you start to lose your hair, become nauseated, vomit, or get abdominal cramps or a racing heart. It's rare, but in some people excessive amounts of selenium (selenosis) manifest as nerve damage, spots on the nails, nausea, and vomiting.

Install a Nutrient Security System

To ensure that you are getting selenium from your foods, it's important to have enough vitamin B₆ on board, specifically pyridoxal 5'-phosphate, the active form of B₆. Whenever you take vitamin B₆, your body converts it to P5P. You can simply purchase P5P in certain proprietary blends. You need to have P5P on board as a cofactor (an assistant) to help get the selenium out of your food. It's sort of like a shuttle. The B₆ also helps make the selenium work better in your body.

Vitamin E also works hand in hand with selenium. So to install the tightest security system, make sure you are getting enough natural vitamins E and B₆. You can eat a lot of leafy greens for the vitamin B₆ and nuts for the vitamin E, or just take supplements labeled "natural vitamin E."

What's in My Cupboard?

Selenium Picolinate by Thorne Research: These capsules deliver 200 mcg per dose in a form of selenium readily absorbed by the body.

Selenium by Nutraceutical Sciences Institute (NSI): This product gives you selenium in the bioavailable amino acid chelated form, selenomethionine, so it's easier on the stomach. Each kosher capsule provides 200 mcg selenium.

E and Selenium Food Complex by New Chapter: This company manufactures a whole food supplement line. Since selenium and vitamin E work better together, this combination is perfect. The formula is easy to digest because it's natural. It's basically food so usually it does not irritate the stomach lining. This particular blend contains turmeric and ginger, two powerful anti-inflammatories, along with spinach extract, blueberry, fenugreek, and other herbs to support health and wellness. Each vegetarian capsule contains 100 mcg of natural selenium and 50 IU of natural vitamin E, which includes the entire family of eight molecules of vitamin E, rather than an isolated form like most other supplements.

SelenoExcell Selenium Yeast 200 mcg by Natural Factors: Each capsule contains 200 mcg in a bioavailable form of organically bound selenium yeast. SelenoExcell is actually the trademarked name for this patented selenium yeast complex, so you may see that name on the labels of other products sold at health food stores. This product contains no artificial preservatives, colors, sweeteners, dairy products, soy, corn, starch, or wheat.

Selenium by Futurebiotics: Each capsule provides 200 mcg of selenium as amino acid chelate. The label states that this product is free of yeast, starch, sugar, salt, wheat, gluten, soy, corn, dairy products, and artificial colors and preservatives.

Selenium 200 by GNC: These tablets contain 200 mcg of Seleno-Excell and are vegetarian friendly and kosher.

Yeast-Free Selenium by Solaray: This is 100 percent organically bound (to methionine) selenium, so it's a highly absorbable chelated version. It is yeast free. I like this brand because you can find it practically anywhere, it's very affordable, and it's easy to digest.

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Thiamine (Vitamin B₁)

Thiamine is known as B₁ because it was the first of the B vitamins to be identified by scientists. Like all the other Bs, thiamine works better in concert with its cousins than it does by itself. It's water soluble, which means that you have to take it daily since it is not stored in your cells. A true deficiency of thiamine causes beriberi, a condition that's rare in the United States except in people with alcoholism or chronic diarrhea. More often, people who develop thiamine deficiency fly under the radar with symptoms chalked up to aging rather than to nutritional deficits.

Thiamine is important to the digestive process of breaking down carbohydrates, fats, and protein, so it plays a role in maintaining weight, lowering blood sugar, and reducing cholesterol. This makes it incredibly important to people of all ages.

Although this vital nutrient can be helpful in preventing and treating a whole host of conditions, let's start by dispelling a couple of myths. Some people think that thiamine can repel insects. Some thiamine does get excreted through the skin, and insects are apparently put off by this residue. The theory is that if you have a good enough supply on board, you might be less likely to get bitten. Hmm. If I ever travel to the Amazon River Basin, where insects are the size of small VWs, I won't be counting on thiamine. But I will keep this information in my back pocket, right next to a big flyswatter.

Some misguided people also think that thiamine can prevent motion sickness, for example on a cruise. This reminds me of the last Caribbean cruise I went on. A guest at my table kept saying how dizzy she was from the swaying of the ship (which was not moving one iota). She asked for health advice while I was eating dinner. Finally, over the cheesecake, I suggested that the next night she should skip the 2½ glasses of cabernet sauvignon before dinner and the Frangelico for dessert, as

these sorts of things tend to make the boat sway. In her case, thiamine would have been helpful only to replenish what the drug mugger alcohol stole. But it doesn't relieve motion sickness.

So what does thiamine do? To begin with, a deficiency of thiamine can cause macular degeneration, reduced appetite, fatigue, weakness, poor digestion, chronic constipation, an inability to gain weight, paresthesia (pins and needles or a sensation that someone is poking you with toothpicks all over the place), and mental fatigue. It can also lead to depression, nervousness, mental exhaustion, and insomnia. If the deficiency persists, the muscles become affected, which could cause leg cramps and general muscle weakness.

That last symptom is a big concern because your heart is a muscle and it's not supposed to be weakened. In a state of thiamine deficiency, the heart muscle gets a tad lazy and stops pumping properly. This leads to hypertrophy (enlargement) of the heart. Then, because circulation slows down, even the scalp loses blood flow, causing the hair to fall out and new hair growth to slow down.

Even though thiamine deficiency is fairly rare, it is getting more common thanks to processed foods and sweets made with refined white sugar, neither of which supplies adequate amounts of the nutrient. Alcohol, though, is the biggest drug mugger of thiamine, so imagine all those people who enjoy wine with dinner. They are more than likely deficient in B₁.

People with diabetes can greatly benefit from taking a thiamine supplement because it can help prevent diabetic retinopathy, blurry vision, atherosclerosis, and the plaque buildup that especially affects diabetics. All this gunk is what squeezes off arteries to the heart, limbs, and eyes.

Naturally, people with heart disease could also benefit because thiamine not only helps normalize cholesterol, but also has a mild diuretic effect, both of which are helpful. If you take this supplement, be sure to take it in the morning so you're not running to the bathroom during the wee hours.

You'll soon see from my drug mugger list that some heart medications are drug muggers of thiamine. Obviously, anyone who takes a drug mugger is at higher risk for thiamine deficiency. One study found that 98 percent of people with congestive heart failure who took the loop diuretic furosemide (approximately 80 mg daily) were deficient in thiamine. Based on this study, it looks like taking a thiamine supplement is a must for any heart failure patient on a loop diuretic.

All the B vitamins play a role in protecting the nerves and improving nervous system function. Thiamine can help improve numbness and tingling (peripheral neuropathy), burning sensations, painful and tender feelings in the limbs, and headache. If you run low on thiamine, you can develop all of these problems along with fatigue, depression, and memory loss.

If you drink alcohol, you must take a thiamine supplement because alcohol is a huge drug mugger of this nutrient. Longtime alcoholics are prone to malnutrition, causing more pronounced thiamine deficiency. This is the part that sounds crazy: Chronic drinkers frequently develop mental confusion, staggering gait, and visual disturbances. Doesn't that sound like what happens after a few beers? But they experience all these neurologic disturbances (called Wernicke's encephalopathy) even while sober. Thiamine can help relieve these symptoms. It's simple but true. If you are deficient in B₁, then your body has a much more difficult time breaking down the alcohol and clearing it out of your body. So B₁ deficiency is a risk factor for hellish hangovers.

You are probably wondering if thiamine can be used as a hangover remedy. Sure it can. It is much better than other hangover helpers such as orange juice and raw eggs. The study I'm going to share with you is nothing short of remarkable. Laboratory rats were given enough acetaldehyde to kill them (acetaldehyde is one of the metabolic by-products of alcohol). Then some of them were given the antioxidant nutrients vitamin B₁, vitamin C, and L-cysteine. Guess what? The rats that were given the antioxidant cocktail did not die. I have a family member who struggles with alcohol, and it's

challenging for all of us who love him, so I strongly urge you not to drink. Realistically, I know that some people will ignore this advice. If you choose to drink anyway, you can take 200 or 250 mg thiamine before you get the party started, then take 100 mg more before bed along with 1,000 mg vitamin C and 600 mg NAC (cysteine), which scavenges the acetaldehyde. Be aware that acetaldehyde can cause pancreatitis.

Do problems with your memory have you concerned that you might be developing Alzheimer's disease? Then a thiamine supplement is a good choice for you. Thiamine helps improve memory by mimicking acetylcholine, a crucial memory molecule in your brain cells. It sharpens both memory and focus, and apparently also reduces your risk of developing Alzheimer's. Thiamine helps make acetylcholine through the production of acetyl coenzyme A, which feeds directly into your Krebs cycle, the metabolic pathway that gives you energy. In other words, thiamine deficiency can cause mitochondrial dysfunction. This all translates into being exhausted all the time!

Thiamine plays a big role in the digestive process, so people with gastrointestinal disease (who don't absorb the nutrient properly) can often benefit from taking a supplement. Among them are people with poor liver function, irritable bowel syndrome, Crohn's disease, or celiac disease. People who have had gastric bypass surgery often run out of thiamine because they have poor absorption in their gastrointestinal tracts.

Dieting can also cause an individual to run low on thiamine. A woman who goes on a crash diet and starves herself for several days in order to look thinner at her 10th high school reunion is likely going to that event with a thiamine deficiency. Chronic dieting or simply not eating (if you have chronic pancreatitis pain, for instance, and can't eat much or anything at all) can also be a problem. Low levels of acetylcholine have been tied to anorexia, so taking thiamine may help people with this condition. (Remember, thiamine mimics acetylcholine in the body.) Thiamine overdose is rare, even in high dosages, but it is possible. You're getting too much if you develop headaches, tremors, irritability, rapid pulse, or insomnia, or if a blood test shows that your level of

thyroid hormone has fallen below normal. By thyroid hormone I mean free T₃ specifically, not T₄.

Drug Muggers of Thiamine (Vitamin B₁)

Acid Blockers

Cimetidine (Tagamet)
Esomeprazole (Nexium)
Famotidine (Pepcid and Pepcid Complete)
Lansoprazole (Prevacid 24HR)
Nizatidine (Axid)
Omeprazole (Prilosec OTC)
Pantoprazole (Protonix)
Rabeprazole (Aciphex)
Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Rolaids, Titalac, Tums)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (Just a few here, but all of them are drug muggers.)

Aminoglycosides
Amoxicillin (Amoxil)
Azithromycin (Z-pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)

Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Penicillin (Pen VK)
Sulfamethoxazole and trimethoprim (Bactrim Septra)
Tetracycline (Sumycin)
Anticonvulsants
Phenytoin (dilantin) (Space supplement at least 4 hours
away from the medication.)
Zonisamide (Zonegran)

Antivirals

Delavirdine (Rescriptor)
Lamivudine (Epivir)
Nevirapine (Viramune)
Foscarnet (Foscavir)
Zidovudine, AZT (Retrovir)
Zidovudine and Lamivudine (Combivir)

Cardiac Glycoside

Digoxin (Lanoxin, Lanoxicaps, Digitek)

Blood Pressure Drugs

Diuretics, loop:

Bumetanide (Bumex)
Ethacrynic acid (Edecrin)
Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, potassium-sparing: (possibly, however this is not conclusive)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Bronchodilators

Theophylline (Uniphyl, Theo-24, or Theo-Dur)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Estrace, Climara, Estraderm, Estring, Activella, Femring, Combipatch, EstroGel, Menostar, and many others)

Estrogen-containing drugs (hormone replacement therapy and birth control)

Estrogens, conjugated (Premphase, Prempro)

Ethinyl estradiol (found in many birth control pills)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

Sulfonamides

MISC:

Alcohol

Betel nuts (also called bettlenuts or areca nuts, these are popular in Taiwan)

Coffee

Estrogen dominance

Genetic problems that prevent you from activating B₁

Raw shellfish or raw seafood (such as sushi, oysters, or mussels)

Tea (because of the tannins in tea, so even decaf)

Tobacco (nicotine)

Quercetin and rutin (two popular dietary supplements)

Sulfites found in foods as a preservative

Thiamine: Put This on Your Plate

Romaine lettuce, asparagus, spinach, sunflower seeds, yellowfin tuna, celery, green peas, tomatoes, eggplant, mustard greens, brussels sprouts, cabbage, watermelon, carrots, squash, broccoli, corn, kale, pineapple, oats, oranges, split peas, peanuts, lentils, and whole wheat.

An Absurdly Inexpensive Way to Feel Better

If you take too much thiamine, you may become deficient in your other B vitamins. Remember that whenever you take a single B vitamin, it is wise to take a B complex, too, so that the other Bs are in your system.

For general health: 5–10 mg per day

Drug mugger dose: 20–50 mg per day

Heart disease, alcoholism, or diabetes: 50–250 mg per day (ask your doctor for his or her input on this)

Just So You Know

People who have cancer or are undergoing chemotherapy should stick to very low dosages. Thiamine is sometimes given to combat the B₁ deficiency associated with fast-growing cancers like leukemia, but low doses are used because some studies have found that doses of more than 3 mg per day could backfire and increase the growth of the tumor. It's not completely clear, because chemotherapy itself can cause thiamine deficiency, but supplementing with too much can spark faster tumor growth in certain people. So my advice is to ask your doctor if thiamine is right for you, and if so, stick to what he or she advises.

Also, you will find lots of B₁ supplements with something called benfotiamine. This is a patented, fat-soluble, synthetic version of thiamine also called S-benzoylthiamine-O-monophosphate. This molecule is a precursor to thiamine and appears to be very effective in replenishing nutritional deficiencies. There is clinical research suggesting that benfotiamine offers protection against advanced glycation end products, or AGEs, which are typically associated with age-related diseases such as diabetes, Alzheimer's, cataracts, heart attack, and stroke. Reducing AGEs is one of the best things you can do if you want to reverse diabetes or blood sugar abnormalities. Simply put, thiamine, and more specifically benfotiamine, appear to have antiaging benefits.

Install a Nutrient Security System

The more refined the food, the less thiamine you get. If you eat the typical American diet, you will become thiamine-depleted in about 3 to 4 weeks. It doesn't take long! Remember, this is a water-soluble vitamin, so it's not stored in your body. You have to constantly replenish this nutrient. It's always better to get your nutrients from foods rather than

supplements, but I feel that supplementation is necessary for some people.

To install the tightest security system and get the highest content of thiamine from your foods, always choose brown rice (not white rice), whole grain bread (not white bread), and so forth. When supplementing, it's better to take smaller doses throughout the day than to take one large dose. Your body just takes what it needs and excretes the rest.

Thiamine is also a must for anyone taking high dosages of any other B vitamin since that can cause a relative deficiency of thiamine. Bs exist as a family (called B complex), so if you take one in a high dose, your body is tilted in the direction of the B you're taking. You won't even realize a deficiency is in the making because it could take weeks or months to develop, and all the while you think you're losing your mind, forgetting stuff all the time, and maybe even developing paresthesia, that prickly feeling all over. It's really not that uncommon, because many people take high doses of methyl B₁₂ for demyelination disorders or fatigue. Other people commonly take high dosages of folic acid (or 5-MTHF, the active form) to improve estrogen metabolism or protect against heart disease. Some people take high dosages of B₆ for carpal tunnel. My point is that if you drive up the level of a particular B vitamin, you are very likely going to suffer a relative deficiency of thiamine, and it's superuncomfortable.

What's in My Cupboard?

Vitamin B-1 by Solaray: This product contains pure thiamine in a whole food base. Solaray uses natural sweeteners and flavors in all of its products, as well as natural preservatives such as vitamin E and rosemary extract.

Vitamin B-1 by Swanson: These small capsules provide 100 mg thiamine hydrochloride in rice flour, so it's gluten free. This company also offers the synthetic version of B₁ I mentioned that is considered to be more easily absorbed because it's fat soluble so it gets into the cells faster and easier.

It's called benfotiamine. Contact information: www.swansonvitamins.com.

B-Complex #1 by Thorne Research: I like this brand for people who are in good general health because it contains a full range of all the B vitamins including pantothenic acid, riboflavin, folic acid, niacin, B₆, and others. It also has a good amount of B₁ (200 mg per capsule). It is yeast free, magnesium stearate free, and free of all diluents, flowing agents, and allergens. It doesn't get any purer than that!

B1 Caps by Twinlab: These hard gelatin capsules contain 100 mg pure crystalline thiamine that is yeast free and free of other allergens. It does not have any coatings, bindings, or colorings and is gluten free.

B-1 by Nature Made: This product contains 100 mg of thiamine with no artificial colors, flavors, or preservatives. It's also gluten free.

High Potency B-1 by Source Naturals: This product is strong, offering 500 mg per tablet. The company also produces 100 mg tablets.

Benfotiamine by Nutraceutical Sciences Institute (NSI): This product, sold at www.vitacost.com, is the fat-soluble precursor to thiamine. It is kosher.

Mega Benfotiamine by Life Extension: This is a pure, high-potency product (250 mg) free of all allergens.

Thiamine by injection: This is given by your doctor, particularly holistic MDs, but they will usually test your blood first to see if you're deficient (since they feel it's rare). I don't think blood level is as important as the clinical picture, though. I've seen people get remarkably better on thiamine injections or oral supplements despite their so-called normal blood levels.

One of the most effective ways to get thiamine (and other Bs) into your system is with an IV drip in a mixture called a Myers cocktail. I've tried this and found it to be just amazing because it created so much energy for me and it lasted for days.

Vitamin C

Vitamin C is a powerful antioxidant that is best known for protecting you against a cough or cold. Linus Pauling, the two-time Nobel Prize winner, made this nutrient famous in the 1970s. Does it really work? Many experts still think so. I'm one of them.

When it comes to the benefits of vitamin C, helping to prevent and heal colds is just the tip of the iceberg. It is great for sweeping away free radicals, those naturally occurring molecules that damage the body's cells. Studies have shown that it does boost your immunity to infections and cancer. But it gets better. Vitamin C (also called ascorbic acid) is good for so much more than just your immune system.

Vitamin C is crucial for your heart because it protects your heart valves, arteries, and capillaries, ensuring adequate blood supply to and away from your heart.

Believe me when I tell you that vitamin C can act as a natural cholesterol reducer, behaving just like a weak statin drug. In 2008 a researcher published a review in the *Journal of Chiropractic Medicine* that analyzed data pooled from 13 different studies. He concluded that: "Supplementation with at least 500 mg [daily] of vitamin C, for a minimum of 4 weeks, can result in a significant decrease in serum LDL cholesterol and triglyceride concentrations." Both LDL (low-density lipoprotein) cholesterol and triglycerides are blood fats that contribute to heart disease. Another study from 2008 concluded that vitamin C lowers CRP—which stands for C-reactive protein—just as well as statins in those with high CRP levels. CRP is a strong marker for cardiovascular risk—think heart attack. So if vitamin C can reduce CRP, I'd recommend this nutrient to everyone who is overweight, diabetic, or at risk for heart disease.

Just one more comment on heart disease since it's the number one killer in the United States. Another relatively new

antioxidant called astaxanthin (BioAstin) can also reduce CRP. (See page 276 for more on this.) Even though drug companies are aware of the studies showing how well natural vitamin C lowers cholesterol, you only see advertisements for the drugs, don't you? One doctor who pays special attention to the role of vitamin C in supporting heart health is Matthias Rath, MD. It's worth spending some time on his Web site: www.drrathresearch.org.

Vitamin C also has anticancer properties. There's another good reason to enjoy citrus fruits, which are high in this important nutrient. Isaac Eliaz, MD, knows a lot about this. He is a pioneer in the field of integrative medicine, a researcher, a clinician, and the author of dozens of research studies, which you can read about on his Web site, www.dreliaz.org.

Dr. Eliaz has dedicated his life to conquering cancer and other supposedly incurable diseases. You might call him the Sherlock Holmes of health—just replace the magnifying glass with a microscope. Dr. Eliaz is the mastermind behind an innovative product called PectaSol-C Modified Citrus Pectin. It's like citrus rind in a capsule. Citrus rind is brimming with various polysaccharides, but don't let the big word scare you. They are just long chains of sugar, and they confer important health benefits such as protecting you from cancer, detoxifying your body, and snatching up heavy metals that harm you.

I interviewed Dr. Eliaz about the importance of vitamin C and cancer-fighting supplements such as MCP. He said, "As frightening as a cancer diagnosis is, I assure you that you need not battle it alone. There are safe, highly effective natural therapies that can augment and support your other treatment strategies." He should know. He formulated one of them.

Vitamin C also promotes healthy gums and teeth and helps you heal wounds, burns, and scars. This vitamin is also helpful when you indulge in foods that are probably best avoided. For example, it's a good idea to beef up your vitamin C intake—say, with fresh-squeezed orange juice, camu camu berries, or even a squeeze of lemon—if you are planning to eat a hot dog, bacon, or a bologna sandwich. I'd prefer you skip these foods, of course, but if you insist, at least get some C into your belly

a few minutes before eating processed meats. The vitamin C helps neutralize the nitrites and nitrates in these foods before they latch on to your healthy cells and potentially damage the DNA (possibly contributing to cancer). You get only a little help from the C when you eat these foods, but it's better than nothing.

I learned this trick from my friend Health Ranger Mike Adams, the founder of www.naturalnews.com. He encourages people to get healthy with natural foods, phytochemicals, and high-quality supplements, and he posts informative articles and podcasts to really motivate you. Recently, he launched a comprehensive, easy-to-use database that helps people find interesting books by the most knowledgeable health-care authors of our time.

Speaking of unhealthy indulgences, you should also know that smokers need more vitamin C because nicotine is a drug mugger of C (as well as niacin).

Studies have shown that vitamin C protects against cataracts. It's also a great beauty supplement because it helps you make collagen and seems to reduce the occurrence of brown age spots.

Vitamin C enhances the amount of iron you absorb, and it keeps it hanging around a little longer. You might say that foods rich in vitamin C can protect against iron deficiency anemia in susceptible people such as women who have heavy menses or those who have slow, chronic blood loss. Women who have preeclampsia during pregnancy have been found to have low levels of vitamin C. And because C concentrates in the adrenal glands, it's crucial for your energy levels. This is why people who run low on vitamin C feel weak and tired and get frequent infections. Vitamin C has also been shown to reduce lead, a heavy metal toxin, in the body.

This nutrient also helps put you in a good mood because it activates brain chemicals that support positive feelings, for example, serotonin and dopamine. When people run low on vitamin C, they often feel depressed and tired, so be sure to take C when you are dealing with a lot of stress.

A deficiency may also lead to easy bruising, bleeding gums, nosebleeds, and dark circles under the eyes from all those broken capillaries leaking blood. People with severe vitamin C deficiency develop a disorder called scurvy. They can also develop gallstones more frequently, but too much vitamin C increases your risk for kidney stones. It's a catch-22.

Many medications rob your body of C, most notably aspirin, as well as oral contraceptives, steroids, analgesics, and antidepressants.

And this is neat: People who have higher histamine levels—for example, those with allergies—might enjoy the antihistamine effect that vitamin C in high dosages offers. These people seem to have trouble falling asleep because of congestion, so it may not be a bad idea to boost vitamin C intake in the evening. Ask your doctor if a higher dose of 1,000 to 2,000 mg at bedtime would be a good alternative to all those nasal sprays, inhalers, and pills. This won't work overnight, but after a few weeks, you may notice fewer sniffles.

Drug Muggers of Vitamin C

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Analgesics

Aspirin (Bayer, Ecotrin, St. Joseph)

Aspirin with dipyridamole (Aggrenox)
Carisoprodol with aspirin (Soma Compound)
Methocarbamol and aspirin (Robaxisal)
Oxycodone and aspirin (Percodan)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)
Aluminum carbonate gel (Basaljel)
Aluminum hydroxide (Amphojel, AlternaGEL)
Calcium carbonate (Rolaids, Titalac, Tums)
Magnesium hydroxide (Phillips' Milk of Magnesia)
Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)
Azithromycin (Z-Pak)
Cefaclor (Ceclor)
Cefdinir (Omnicef)
Cephalexin (Keflex)
Ciprofloxacin (Cipro)
Clarithromycin (Biaxin)
Doxycycline (Doryx)
Erythromycin (E.E.S.)
Levofloxacin (Levaquin)
Minocycline (Minocin)
Sulfamethoxazole and trimethoprim (Bactrim Septra)
Tetracycline (Sumycin)

Anti-Inflammatory Drugs (most)

Diclofenac (Voltaren)

Etodolac (Lodine)
Ibuprofen (Advil, Motrin)
Indomethacin (Indocin)
Ketoprofen (Orudis)
Naproxen (Aleve, Anaprox, Naprosyn)
Sulindac (Clinoril)

Antivirals

Delavirdine (Rescriptor)
Foscarnet (Foscavir)
Lamivudine (Epivir)
Nevirapine (Viramune)
Zidovudine, AZT (Retrovir)
Zidovudine and Lamivudine (Combivir)

Barbiturates

Pentobarbital (Nembutal)
Phenobarbital (Donnatal, Luminal)
Secobarbital (Seconal)

Blood Pressure Drugs

Diuretics, loop:

Bumetanide (Bumex)
Ethacrynic acid (Edecrin)
Furosemide (Lasix)
Torsemide (Demadex)

Diuretics, potassium-sparing:

Amiloride (Midamor)
Spironolactone (Aldactone)
Triamterene (Dyazide, Dyrenium, Maxzide)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Corticosteroids

Dexamethasone (Decadron)

Fluocinonide (Lidex)

Methylprednisolone (Medrol)

Prednisolone (Orapred liquid, Pediapred)

Prednisone (Deltasone)

Triamcinolone (Aristocort cream)

Inhaled corticosteroids:

Budesonide (Rhinocort)

Flunisolide (Nasacort, Nasarel, Nasilide)

Fluticasone (Flonase)

Triamcinolone (Azmacort inhaler)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Estrace, Climara, Estraderm, Estring, Activella, Femring, CombiPatch, EstroGel, Menostar, and many others)

Estrogen-containing drugs (hormone replacement therapy and birth control)

Ethinyl estradiol (found in many birth control pills)

Estrogens, conjugated (Premphase, Prempro)

Levonorgestrel (found in most birth control pills and Plan B)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

MISC:

Alcohol

Nicotine products (cigarettes, cigars, chewing tobacco, nicotine patches)

Vitamin C: Put This on Your Plate

Camu camu berries, bell peppers (especially red), parsley, broccoli (steamed), cauliflower, strawberries, lemon juice, romaine lettuce, brussels sprouts, papaya, kale, turnip greens, kiwifruits, oranges, tomatoes, grapefruit, raspberries, asparagus, celery (raw), pineapple, watermelon, cranberries, summer squash, blueberries, carrots, garlic, apricots, beef liver, sweet potatoes, plums, onions, and baked potatoes (with skin).

An Absurdly Inexpensive Way to Feel Better

For general health: 100–300 mg divided into two or three doses throughout the day (rather than one big dose) so you have some vitamin C on board all day

Drug mugger dose: 300–2,000 mg divided into two or three doses throughout the day

Just So You Know

Vitamin C, or ascorbic acid, is a water-loving vitamin that all humans need and unfortunately are unable to manufacture. Surprisingly, humans don't make their own vitamin C, as some animals do. We have to ingest it in foods or supplements. The richest food sources are citrus fruits and other fruits and vegetables.

Dietary vitamin C supplements are sold in one of the following forms or a combination of them:

Ascorbic acid or ascorbate

Sodium ascorbate

Calcium ascorbate (Ester-C is the trade name of this patented form of vitamin C, which some believe to work faster than naturally occurring C.)

Some dietary vitamin C supplements are extracted from natural sources such as acerola, a cherrylike fruit, or rose hips.

There are numerous forms of vitamin C on the market today, and each product claims to have some advantage over the others. The most common type is ascorbic acid. From that term alone you won't be able to tell if the product comes from a natural source or was made in a laboratory. Depending on what study you read, naturally derived C and synthetic versions confer similar positive benefits. Nevertheless, I feel that there are better forms of vitamin C out there, and below you will find the brands I recommend.

You are getting too much vitamin C if you start to develop stomach upset, diarrhea, gas and bloating, or kidney stones. The higher your level of copper, the greater your need for vitamin C. People with copper plumbing in their homes tend to accumulate the mineral in their bodies. People who have zinc deficiencies may have a relative increase in copper levels. Those two minerals should stay in balance. Read more about zinc in [Chapter 24](#) on page [288](#).

Very high doses of vitamin C (greater than 1,000 mg daily) should be avoided by pregnant women because it can increase

the risk for preeclampsia.

Install a Nutrient Security System

Vitamin C is a powerful antioxidant. There's no doubt that it performs good housekeeping in your cells, sweeping up and eliminating free radicals. To install the tightest security system in your body, it's best to take vitamin C along with another natural nutrient called lipoic acid. You can buy alpha-lipoic acid (or R-lipoic acid) at health food stores. Why the dynamic duo? Vitamin C normally sweeps your body clean just one time before it exits the body with whatever it can latch on to. When lipoic acid is also on board, it regenerates vitamin C and gives it another go-round so it can scavenge additional dangerous toxins. This is true synergy.

What's in My Cupboard?

Buffered Vitamin C 500 mg by Bluebonnet: These capsules are gluten free, sugar free, yeast free, and dairy free. They are kosher, too. They contain only pure vitamin C along with bioflavonoids from fresh oranges, tangerines, grapefruit, lemons, hesperidin, and rutin. Contact information: www.bluebonnetnutrition.com.

Citrus Bioflavonoid Complex 1,000 mg by Solgar: These vegetarian tablets are kosher, starch free, and gluten free, and contain a powerful blend of bioflavonoids derived from fresh fruits. Solgar products are sold at health food stores.

Buffered C Powder by Thorne Research: This product is pure crystalline vitamin C (calcium ascorbate) with no added fillers. It's a powder you mix with water or juice and drink. I put it in my smoothies or coconut water. It is hypoallergenic.

AdvanC Complex by Nutraceutical Sciences Institute (NSI): This product also combines vitamin C with citrus bioflavonoids. The advantage here is that the two work together, especially in their antioxidant activities and in strengthening blood vessels. This product is made in an exclusive process that combines ascorbic acid with a patent-pending mineral complex and C metabolites to produce an all-

natural, pH-neutral formula. The nonacidic formula is gentler on the digestive system than plain vitamin C and easily absorbable. Contact information: www.gonsi.com or www.vitacost.com.

PectaSol-C Modified Citrus Pectin by EcoNugenics: This product provides the body with a multitude of compounds that have been studied and appear to have some anticancer effects. It can also bind heavy metals and remove them from the body, so you get a double whammy with one formula. There are many modified citrus pectin (MCP) formulas on the market, but this brand stands alone in terms of its high quality and published research that documents its benefits.

PectaSol-C is special because of the way it's formulated. The tiny particles are so small that they get into your hard-to-reach cells and create powerful healing changes in the body. In a study of individuals who had deadly forms of cancer (some in their final stages), MCP offered the participants better quality of life, reduced pain, improved clinical outcomes, and in one case of metastatic prostate cancer, a 50 percent reduction in PSA (prostate specific antigen). Could this product extend the lives of some men with prostate cancer?

It's a good idea to take a bottle of MCP (for this brand, 1 capsule twice daily on an empty stomach) each year just to be on the safe side. Why wait for a devastating diagnosis? Contact information: www.econugenics.com/mcp. You can read more about MCP and its developer, Dr. Eliaz, at www.dreliaz.org.

Emergen-C by Alacer: These are packets of tangerine- or raspberry-flavored powder that you mix with water. The supplement provides a whole host of vitamins, antioxidants, and minerals. Each packet delivers 1,000 mg vitamin C along with zinc, calcium, magnesium, quercetin, and B vitamins.

C-Plus Citrus Bioflavonoid Caps by Twinlab: This product is a powerhouse of vitamin C. Each dose (2 capsules) provides 1,000 mg of vitamin C and 650 mg of citrus bioflavonoids. It also contains 50 mg of rutin, which helps with capillary strength and vein insufficiency.

BioAstin Supreme by Nutrex Hawaii: One of nature's most powerful antioxidants, this product has been shown to reduce C-reactive protein by more than 20 percent in only 8 weeks. It can (and should) be taken with vitamin C for ultimate heart protection. Contact information: www.nutrex-hawaii.com, or ask your local health food store to get it.

Vitamin D

Vitamin D is one of the most fascinating and talked about nutrients today. I'm not trying to be morbid, but vitamin D is actually used in bait to kill rats. Don't be alarmed. You'd have to swallow the contents of 200 bottles of vitamin D before having a fatal reaction. Supplemental vitamin D is actually quite safe for humans even if it's bad for critters. And it's not just safe, it's vital to our survival.

Once ingested, vitamin D turns into a powerful hormone that targets more than 2,000 genes in the human body. Research has found that a vitamin D deficiency is a major factor in the development of at least 17 types of cancer, as well as stroke, heart attack, diabetes, and chronic pain.

Let There Be Light!

Sunlight spurs the production of vitamin D in our bodies. Without the sun, we would all die. So I'm wondering who went and made sunlight sound so bad? Maybe people who have something to sell you? Like sunscreen.

If you get 30 minutes of sunshine daily, you receive about 10,000 to 20,000 IU vitamin D. Plant that number in your brain because in a few minutes I'll tell you about supplementing with oral vitamin D. I'm not suggesting megadoses, but I want you to see how ridiculously low some of the guidelines are.

Sunshine makes vitamin D in your body, and D protects you from cancer. What is the sunscreen doing to you? According to a study published in *Environmental Health Perspectives* in 2008, low levels of sunscreen, less than swimmers typically apply, could kill coral in just 4 days. The popular brands tested had these four ingredients in common: paraben, cinnamate, benzophenone, and a camphor derivative. Certain sunscreens might even be killing coral reefs. People wearing sunscreen

swim by the reefs, and the sunscreen releases dormant algae viruses into the water.

Some of the chemical ingredients used in popular sunscreen products have not even been tested for safety or approved by the FDA and now appear to be associated with cancer. They get absorbed right through the skin (which is very porous), and from there the chemicals go into the bloodstream. Do I sound a bit harsh? Sorry. Are you wondering what those fear-provoking ads about skin cancer have to do with getting adequate vitamins? By blocking the sun, certain sunscreens can lead to vitamin D deficiency, and this can increase your risk for skin cancer. In fact, we are now dealing with a national epidemic of vitamin D deficiency and an uncannily high rate of cancer. Could there be a connection?

We absolutely need this vitamin, which turns into a hormone in the body. It helps us stay healthy, prevents cancer, and improves insulin sensitivity (which means a lower risk of type 2 diabetes). I've hammered this issue in my column for a long time. Only recently has it made it to the mainstream media. Numerous well-designed clinical trials have shown that widespread vitamin D deficiency is real and very dangerous. I have no interest in the vitamin D industry. I want to protect you from cancer, and it just so happens that vitamin D is important for doing just that. The form of vitamin D we get is important as well.

It's alarming but true that rickets, the vitamin D deficiency disease, was once rare in the United States but is now once again of serious concern. In my opinion this has to be partly due to all the fear of sunshine and use of chemical-laden sunscreens.

So why is the recommended daily dose of vitamin D for 40-year-olds only 200 IU and for 65-year-olds only 40 IU? If we met 100 percent of the daily value for vitamin D, would it keep us from developing a deficiency and rickets? Possibly, but it certainly wouldn't help us promote good health. Earlier, you planted a number in your head. Do you recall how much vitamin D you get from being in the sun for 30 minutes? The answer is 10,000 to 20,000 IU vitamin D. So a daily value of

even 400 to 600 IU falls sorely short of what most people can get from natural exposure. But since we are covered in sunscreen, working indoors, or living in regions where the sun doesn't shine for very long, it's safe to assume that we are all probably deficient.

I make it my job to research studies, and in recent years there were many alarming headlines in scientific journals. One of them, in the September 2009 issue of *Progress in Cardiovascular Nursing*, said: "Vitamin D Deficiency in the United States: A Growing Epidemic with Serious Health Consequences." Here's another one from the February 20, 2008, issue of the *Journal of the American Medical Association*: "Vitamin D Deficits May Affect Heart Health." The take-home point of this is that millions of people in the United States are deficient in vitamin D, and it can lead to many devastating consequences, including heart attack, poor immune function, and diabetic complications involving the heart. Furthermore, because vitamin D is an immune booster, I think it is extremely important if you are trying to ramp up immune function.

You're more likely to run out of D if you take a drug mugging of this important nutrient or if you're a vegetarian. Dark-skinned people can have less vitamin D stored in their bodies because it takes a lot more sunshine for dark skin to make the vitamin. Some people have a genetic issue that prevents them from fully utilizing the nutrient and need added vitamin D in their regimens. People with liver or kidney disease are unable to activate vitamin D properly to make it usable in the body.

Vitamin D undergoes some chemical reactions in the liver and kidneys in order to become activated. The active form is called 1,25-dihydroxycholecalciferol, which is usually shortened to *calcitriol*. People with normal kidney function continually convert vitamin D into calcitriol, which works as a hormone and a steroid, playing an enormous role in the hundreds of chemical reactions that keep us alive. One of its primary roles is in the immune system.

The rates of breast, prostate, and colon cancer as well as multiple myeloma cases are not decreasing. Studies now show

that vitamin D plays a protective role against these cancers and many others.

Vitamin D helps you absorb calcium and phosphorus from your diet. If there is no vitamin D in your body, your bones don't get enough of these important minerals and you develop rickets. Vitamin D is essential for keeping bones strong. If you don't get enough, your risk for osteoporosis goes up because bones get softer. This is true because vitamin D works in tandem with calcium, so a deficiency in D could result in a deficiency in calcium. Browse through Chapter 7 on calcium, beginning on page 113, for more on symptoms associated with low calcium.

In children, a deficiency causes knock-knee, bowed legs, spinal curvature, or dental problems. In adults, a deficiency could show up as osteoporosis, SAD (seasonal affective disorder, a form of depression), rheumatic pains, muscle weakness, gradual loss of hearing, and even a higher risk of cancer, particularly colon, prostate, and breast cancer, according to some cutting-edge research. In my previous book *Diabetes without Drugs*, I recommend vitamin D because it helps you cut cravings, reduce appetite, and improve insulin sensitivity. Vitamin D does the body good and does more than most people realize, even if you are not mugged by a drug.

Drug Muggers of Vitamin D

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (Amphojel, AlternaGEL)

Calcium carbonate (Rolaids, Titalac, Tums)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antibiotics (a few examples)

Amoxicillin (Amoxil)

Azithromycin (Z-Pak)

Cefaclor (Ceclor)

Cefdinir (Omnicef)

Cephalexin (Keflex)

Ciprofloxacin (Cipro)

Clarithromycin (Biaxin)

Doxycycline (Doryx)

Erythromycin (E.E.S.)

Levofloxacin (Levaquin)

Minocycline (Minocin)

Sulfamethoxazole and trimethoprim (Bactrim, Septra)

Tetracycline (Sumycin)

Anticonvulsants

Carbamazepine (Tegretol, Carbatrol)

Ethosuximide (Zarontin)

Gabapentin (Neurontin)

Phenobarbital Phenytoin (Dilantin)

Primidone (Mysoline)

Valproic acid (Depakote, Depakene)

Antifungals

Ketoconazole (Feoris, Nizoral)

Antituberculosis Agents

Ethambutol (Myambutol)

Isoniazid (INH)

Rifampin (Rifadin)

Barbituates

Butalbital-containing drugs (Fiorinal, Fioricet, Zebutal)

Blood Pressure Drugs

Calcium channel blockers:

Diltiazem (Cardizem)

Felodipine (Plendil)

Isoptin amlodipine (Norvasc)

Nifedipine (Procardia, Adalat)

Verapamil (Calan)

Diuretics, potassium-sparing (these are not drug muggers, see examples here):

Triamterene (Maxzide, Dyazide, Dyrenium) may increase vitamin D levels

Cholesterol Agents

Cholestyramine (Questran)

Colestipol (Colestid)

Fibrates (These drugs deplete CoQ10 and Vitamin E, which are two other fat-soluble vitamins, so I think it's likely that they deplete vitamin D too.)

Clofibrate (Atromid)

Gemfibrozil (Lopid)

Fenofibrate (Tricor)

Statins (Some studies suggest a statin-induced vitamin D deficiency, which causes muscle pain and cramps. Have your doctor monitor your levels twice annually if you take a statin.) Atorvastatin (Advicor, Lipitor)

Fluvastatin (Lescol)

Lovastatin (Altacor, Altoprev, Mevacor)

Pitavastatin (Livalo, Pitava)

Pravastatin (Lipostat, Pravachol, Selektine)

Rosuvastatin (Crestor)

Simvastatin (Lipex, Zocor)

Simvastatin and ezetimibe (Vytorin)

Simvastatin and niacin (Simcor)

Corticosteroids

Dexamethasone (Decadron)

Hydrocortisone (Cortef)

Methylprednisolone (Medrol)

Prednisone (Deltasone, Sterapred, Liquid Pred)

Inhaled corticosteroids:

Budesonide (Rhinocort)

Flunisolide (Nasarel, Nasalide)

Fluticasone (Flonase)

Laxatives that contain magnesium (such as magnesium citrate or Milk of Magnesia and stimulant laxatives)

Lipase Inhibitors

Orlistat (Alli, Xenical)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)
Tamoxifen (Nolvadex)
Toremifene (Fareston)

MISC:

Alcohol
Lack of sunlight
Liver or kidney damage Malabsorption as in Celiac, Crohn's, IBS, or pancreatic insufficiency Mineral oil
Olestra (fat substitute often used in "light" potato chips)
OTC diet aids and fat blockers (kidney bean extract or starch neutralizer, for example)

Vitamin D: Put This on Your Plate

Wild cold-water seafood, including salmon, mackerel, tuna, sardines, cod, and halibut; milk; liver; egg yolks; and fortified cereal

An Absurdly Inexpensive Way to Feel Better

Sunshine: Go out for 15–30 minutes every day without sunscreen (not at high noon). Be intelligent about the sun and enjoy it at safe hours during the early morning or late afternoon.

If you avoid the sun, then take 4,000–5,000 IU daily. To get the equivalent in fortified milk, you'd have to drink 40–50 glasses of milk per day, and you don't want to do that. It's better to supplement with some cholecalciferol, vitamin D₃.

For general health: 1,000–5,000 IU per day

Drug mugger dose: 5,000–10,000 IU per day

Cancer or autoimmune disease: Speak to your doctor first, but I suggest 10,000–15,000 IU per day for 2 months,

then reduce dosage.

Just So You Know

The name to look for on the label is vitamin D₃ or cholecalciferol. Avoid vitamin D₂ or ergocalciferol, which is common in some supplements and in prescription drugs containing vitamin D. This form comes from radiating fungus. It's a drug, not natural vitamin D, and it works only about half as well. Your body won't fully recognize it or easily incorporate it.

A prescription version of vitamin D is Hectorol. It's a lab-created version whose chemical name is doxercalciferol. It annoys me that most of our prescription versions of vitamin D are not natural forms of vitamin D₃, so technically they are not even human forms of the nutrient. Vitamin D naturally occurs in seafood, such as salmon, cod, and halibut. In fact, cod liver oil is your best source of vitamin D.

With many OTC brands, you get the real-deal, D₃, and your body understands and easily incorporates it since that's what's made in the human body. It's fairly impossible to overdose on vitamin D if you are getting it from sunlight, although you could wind up with a painful sunburn if you're not careful. It's also impossible to overdo vitamin D by eating foods rich in it.

Some people take large supplemental doses all at once, and even this is considered relatively safe for certain individuals. For example, people with multiple sclerosis are often deficient in vitamin D, and in an effort to prevent relapse and improve nerve health, some doctors recommend 50,000 IU per week for these individuals. The type of vitamin D that most doctors prescribe comes from the pharmacy and is D₂, not natural D₃. I have to emphasize to you that D₂ is not what humans make from natural sunlight; we make D₃. The prescription vitamin is much more expensive than D₃, which can be obtained in any health food store. By the time your body converts the D₂ into a usable form, you've lost about half of the dosage prescribed.

People with impaired kidney function may become deficient in vitamin D because they cannot effectively activate the nutrient to calcitriol, a powerful hormone. For these individuals doctors sometimes prescribe high dosages of vitamin D in order to build levels back up. Depending on the problem, however, some patients with kidney disease need to avoid vitamin D supplements altogether. If you have kidney disease, the use of vitamin D is strictly up to your nephrologist, who knows your kidney function.

People with diabetes can benefit from vitamin D because it improves insulin sensitivity and reduces risk of pancreatic cancer.

If your health-care provider does a blood test and determines that you are low in this important nutrient, he or she may ask you to take a high dose of the vitamin for a limited amount of time. You should not be taking high-dose vitamin D on your own. It is stored in fatty cells and tissues, and cumulative dosing has the potential to cause problems over time.

Supplementing with doses between 2,000 and 5,000 IU per day is fine and indicated for many people. In fact, many doctors who stay up-to-date on nutritional research now recommend supplementing at this level. Once you get above 15,000 or 20,000 IU per day of supplemental vitamin D, I think you are teetering on the verge of too much—unless you are deficient as shown by a blood test and your doctor recommends you take this much for a limited time.

Do note that no matter what type of vitamin D supplement you take, it's best to take it with food. Actually, it's best to take it with breakfast. Why? Taking vitamin D in the morning puts the supplement in sync with your body's natural biorhythm. After all, it's already set up to take advantage of the morning sunshine, which triggers natural vitamin D production. It's hard to get too much vitamin D, but I would be remiss if I didn't at least give you the warning signs of excess. Too much vitamin D can cause excess calcium to build up in the bloodstream, which can cause weakness, confusion, headache, nausea and vomiting, constipation or diarrhea, dry mouth, or a metallic taste in your mouth. Other signs could be

heart rhythm problems, increased thirst, and decreased appetite.

Special note: Some drugs actually increase the activity of vitamin D and can lead to overload. Estrogen-containing drugs and isoniazid or thiazide diuretics like hydrochlorothiazide, or HCTZ, are examples of these. Postmenopausal women who take both calcium (1,000 mg per day) and vitamin D (400 IU per day) appear to have a more significant risk of kidney stones over the course of several years. This was shown in the famous Women's Health Initiative study, but it was not clear whether the nutrients themselves or inferior brands of the nutrients may have caused the problem.

Install a Nutrient Security System

Some people who take vitamin D suddenly develop leg cramps and muscle pain. This happens most often because of an underlying magnesium deficiency that becomes evident as the level of vitamin D starts to climb. In other words, a vitamin D deficiency masks magnesium deficiency, so when D rises with supplementation, the magnesium deficiency rears its ugly head and causes symptoms—leg cramps, muscle pain, and possibly mild heart palpitations. Don't be discouraged and don't panic. Remember, you need vitamin D to slash your risk of cancer and other major diseases.

Vitamin D needs cofactors (think of them as assistants) to help the body utilize it properly. These include zinc, vitamin K₂, boron, vitamin A, and magnesium. Magnesium is absolutely the most important of all. What to do? If I were you, I'd increase my magnesium intake naturally through foods since magnesium from foods is absorbed very well. I wouldn't take a magnesium supplement, although I would recommend spirulina (because it's naturally high in magnesium; see Chapter 12). Magnesium is a key component of the chlorophyll molecule, and chlorophyll is found in green vegetables; this is why leafy greens are incredibly good sources of this mineral. Enjoy your green foods while supplementing with D to install the tightest security system

possible. The cramping should stop with the magnesium-rich foods on board. Continue with the D.

What's in My Cupboard?

SuperEssentials Omega by Living Fuel: This product is an excellent combination of vitamin D₃ plus vitamin A in a perfect ratio, just as you would find them in cod liver oil. SuperEssentials also contains omega-3 fatty acids, vitamin E, and the impressive antioxidant astaxanthin, which helps unclog arteries, beautify the skin, and sweep away free radicals. Contact information: www.livingfuel.com.

Arctic-D Cod Liver Oil by Nordic Naturals: This doesn't taste like fish because it comes in flavors (lemon, peach, orange, spiced apple, and strawberry). A high-potency blend of essential fatty acids rich in pure DHA and EPA (two of the three main forms of omega-3s), this product contains low levels of natural, healthy forms of vitamin A, plus 400 IU of natural vitamin D (cholecalciferol). I like cod liver oil because it has important compounds, vitamins, and essential fatty acids that nourish the brain, joints, heart, arteries, and nervous system. This marine-derived formula is extremely pure and can improve vision, boost mood, ease menstrual discomfort, reduce joint pain, and cut down on your risk for heart disease. It is sold nationwide.

Super D3 by AllergyResearchGroup: This vitamin D comes from a natural source but not from the sea. It's from the lanolin of sheep wool. Lanolin, as you may know, is an oily substance that comes from the sebaceous glands of wool-bearing animals. It's often found in moisturizers and cosmetics. Each capsule contains 2,000 IU cholecalciferol along with a little bit of vitamins C and E for stability.

Vitamin D₃ by Country Life: This product is free of all common allergens, it's affordable, and it's easy to find in health food stores. It contains 5,000 IU vitamin D in the correct, natural form of cholecalciferol.

Vitamin D₃ Mixed Berry Flavor by ChildLife Essentials: This formula is made specifically for infants 6 to 12 months

old, and children 1 to 12 years old. The liquid is alcohol free and contains all-natural ingredients. It has a natural berry flavor. Back in 2008, the American Academy of Pediatrics doubled its recommendation for vitamin D intake and suggested that children receive 400 IU per day. This could be particularly important for children with suppressed immune systems.

Liquid D₃ by LifeTime: This product, perfect for those who cannot take solid supplements or who have trouble with digestion, provides 4,000 IU per dose.

Full Spectrum Vitamin K by AllergyResearchGroup: This formula is named for its vitamin K content. It's a high-quality multitasking formula from a leading manufacturer of pure products. The ingredients in each softgel are intended to help with bone strength. They contain approximately 400–800 IU of D₃ derived from cod liver and tuna oils, along with vitamins A, K, and E.

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Zinc

You need zinc in order to see, hear, taste food, and have sex. The mineral zinc participates in many life-sustaining biochemical reactions in your body by sparking activity in about 100 enzymes. Everyone needs this antioxidant for a strong, healthy immune system, and it helps wounds heal quickly. While researching this book, I learned how incredibly easy it is to lose this mineral, which is rarely talked about and almost taken for granted. It's lost through sweat, feces and urine, hair, skin, semen, and menstrual blood.

Zinc can help you if you are prone to digestive disorders. Typically, people with celiac or Crohn's disease, ulcerative colitis, or irritable bowel syndrome are deficient in zinc. Acid blockers make it to yet another drug mugger list. They zap your zinc supply. How ironic! You take an acid blocker because you're having issues with digestion, and you need zinc to help fend off infections of the gut and maintain a healthy lining.

Zinc is also important for helping men and women stay fertile. If you have fertility issues, this could be the supplement for you. You need zinc to make DNA. Adult men need about one-third more zinc than adult women because this mineral helps make testosterone. Sexually active men need a little more zinc than men who prefer to watch TV in bed. One article I read said that zinc is 100 times more concentrated in semen than in a man's bloodstream. There is also evidence to support zinc's protective effect on the prostate gland; it helps prevent and relieve symptoms of benign prostatic hypertrophy (often called BPH).

This important mineral also helps kill bacteria and viruses. It is a well-known immune protector that boosts the activity of various immune components—T cells, natural killer cells, and interleukin. Without enough zinc on board we get frequent colds and infections. This is a good reason to take it at the first

sign of the sniffles. Zinc apparently can attach in the nose or mouth to the virus that causes the common cold and obliterate it before it can multiply. This keeps you from getting a full-blown infection and may shorten your misery time for a cold by up to 3 days. It could even help protect you from contracting swine flu (H1N1 virus).

An article published in the June 2009 issue of *Immunity and Ageing* stated:

There are remarkable parallels in the immunological changes during aging and zinc deficiency, including a reduction in the activity of the thymus and thymic hormones, a shift of the T helper cell balance toward T helper type 2 cells, decreased response to vaccination, and impaired functions of innate immune cells. Many studies confirm a decline of zinc levels with age. Most of these studies do not classify the majority of elderly as zinc deficient, but even marginal zinc deprivation can affect immune function.

This is so important because many folks do not realize that zinc levels decline as we age, with or without drug muggers. It could explain in part why the frail and elderly are more susceptible to infections. Since zinc plays an important role in the prostate, it may be that zinc deficiency contributes to the prostate problems that affect so many elderly men. Another important study published in *Molecular Medicine* in 2008 supports zinc's role in immune function. Researchers found that zinc was able to calm down the inflammatory response and boost immune cell response. It was also found to sweep away free radicals, meaning it has a powerful role in suppressing oxidative stress and pain-causing inflammatory chemicals.

Since zinc is needed to make both insulin and thyroid hormone, a deficiency could lead to diabetes and hypothyroidism, low production of thyroid hormone. It's important to note that people with diabetes often have this latter condition as well. In a 2009 study published in the *Review of Diabetic Studies*, researchers concluded, "Zinc supplementation reduced serum homocysteine and increased

vitamin B₁₂ and folate concentrations in type 2 diabetic patients with microalbuminuria.” This means that people with diabetes, who often have microalbuminuria (a sign of kidney disease), can take zinc and improve their levels of B₁₂ and folic acid. Not only that, but zinc also appears to reduce homocysteine, a dangerous chemical that promotes heart disease. Not too shabby for one little mineral that is considered “trace” because such tiny amounts impact health so greatly. Makes you want to eat oysters right now, doesn’t it? Six oysters contain 77 mg of zinc.

Zinc works in tandem with vitamin A, so a deficiency in one could result in a deficiency in the other. Low zinc often means low vitamin A. This explains why some people deficient in zinc go on to develop visual problems, macular degeneration, and ultimately blindness. (See Chapter 5 for more symptoms of vitamin A deficiency.) Liver and pancreatic disorders are also associated with lower levels of zinc.

In summary, a zinc deficiency can have effects all over the body, and may cause hearing loss, prostate problems, sexual difficulties, frequent infections, poor vision, night blindness, white spots under the fingernails, and muscle atrophy.

The soil has become depleted of important minerals like zinc in many parts of the world, which adds to the growing problem of mineral deficiency. It’s actually quite common. Elderly people are usually deficient, as are alcoholics and people with kidney or liver disease. Vegetarians tend to run out of zinc more frequently than nonvegetarians, so I always recommend supplementation for anyone who is vegetarian or vegan. Also, people with malabsorption conditions such as candida overgrowth, celiac disease, Crohn’s disease, and irritable bowel syndrome should supplement with zinc.

Drug Muggers of Zinc

Acid Blockers

Cimetidine (Tagamet)

Esomeprazole (Nexium)

Famotidine (Pepcid and Pepcid Complete)

Lansoprazole (Prevacid 24HR)

Nizatidine (Axid)

Omeprazole (Prilosec OTC)

Pantoprazole (Protonix)

Rabeprazole (Aciphex)

Ranitidine (Zantac)

Antacids

Aluminum and magnesium hydroxide (Maalox, Mylanta)

Aluminum carbonate gel (Basaljel)

Aluminum hydroxide (AlternaGEL, Amphojel)

Calcium carbonate (Rolaids, Titalac, Tums)

Magnesium hydroxide (Phillips' Milk of Magnesia)

Sodium bicarbonate (Alka-Seltzer, baking soda)

Antituberculosis Agents

Ethambutol (Myambutol)

Isoniazid (INH)

Rifampin (Rifadin)

Antivirals

Delavirdine (Rescriptor)

Etravirine (Intelence)

Foscarnet (Foscavir)

Lamivudine (Epivir)

Nevirapine (Viramune)

Zidovudine, AZT (Retrovir)

Zidovudine and Lamivudine (Combivir)

Blood Pressure Drugs

Clonidine (Catapres)

Hydralazine (Apresoline)

Methyldopa (Aldomet)

Moexipril (Univasc)

ACE inhibitors:

Benazepril (Lotensin)

Captopril (Capoten)

Enalapril (Vasotec)

Enalapril and HCTZ (Vasotec HCT)

Fosinopril (Monopril)

Lisinopril (Prinivil, Zestril)

Moexipril (Univasc)

Quinapril (Accupril)

Ramipril (Altace)

Trandolapril (Mavik)

Angiotensin II receptor blockers:

Candesartan and HCTZ (Atacand HCT)

Irbesartan and HCTZ (Avalide)

Valsartan and HCTZ (Diovan HCT)

Diuretics, loop:

Bumetanide (Bumex)

Ethacrynic acid (Edecrin)

Furosemide (Lasix)

Torsemide (Demadex)

Diuretics, potassium-sparing:

Amiloride (Midamor) (this is not a drug mugger, it may increase levels)

Triamterene/HCTZ (Maxzide, Dyazide, Dyrenium)

Diuretics, sulfonamide:

Indapamide (Lozol)

Diuretics, thiazide:

Any combination drug that contains HCTZ or hydrochlorothiazide (dozens of drugs contain this)

Chlorothiazide (Diuril)

Chlorthalidone (Hygroton)

Hydrochlorothiazide or HCTZ (Hydrodiuril)

Losartan and HCTZ (Hyzaar)

Methyclothiazide (Enduron)

Metolazone (Zaroxolyn)

Chelating Agent

Penicillamine (Cuprimine)

Cholesterol Agents

Cholestyramine resin (Questran)

Ezetimibe (Zetia)

Fibrates:

Clofibrate (Atromid-S)

Fenofibrate (Tricor)

Gemfibrozil (Lopid)

Corticosteroids

Betamethasone (Diprolene, Luxiq)

Dexamethasone (Decadron) and others

Methylprednisolone (Medrol)

Prednisolone (Pediapred Liquid)

Prednisone (Deltasone, Liquid Pred, Sterapred)

Triamcinolone (Aristocort cream)

Inhaled corticosteroids:

Budesonide (Rhinocort, Symbicort)

Flunisolide (Nasacort, Nasalide, Nasarel)

Fluticasone (Flonase)

Hormone Replacement Therapy/Oral Contraceptives

Estradiol (Estrace, Climara, Estraderm, Estring, Activella, Femring, CombiPatch, EstroGel, Menostar, and many others)

Estradiol and testosterone (EstraTest, Depo-Testadiol)

Estrogen, conjugated (Premphase, Prempro)

Estrogen-containing drugs (hormone replacement therapy and birth control)

Ethinyl estradiol (found in many birth control pills)

Levonorgestrel (in birth control and Plan B)

Norethindrone (found in many birth control pills)

Nonsteroidal Aromatase Inhibitors for breast cancer

Anastrozole (Arimidex)

SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Raloxifene (Evista)

Tamoxifen (Nolvadex)

Toremifene (Fareston)

MISC:

Calcium supplementation (in excess)

Casein (the protein in dairy)

Chelation therapy to remove heavy metals

Chocolate (because it's relatively high in copper)

Coffee, tea, and soda (caffeinated)

Copper supplementation (in excess)

Estrogen dominance

Food dyes rich in copper

Heavy metal toxicity (Likely all heavy metals but these for sure)

Cadmium burden (which occurs from smoking)

Mercury burden (which occurs from certain seafood, environmental chemicals and amalgams)

Smoking (because of the cadmium, a toxic heavy metal in cigarettes)

Zinc: Put This on Your Plate

Oysters, beef, lamb, crab, chicken, lobster, crimini mushrooms, spinach, summer squash, asparagus, Swiss chard, collard greens, milk, cheese, yeast, whole grains, miso, shrimp, maple syrup, broccoli, beans, green peas, yogurt, nuts, pumpkin seeds, and sesame seeds.

An Absurdly Inexpensive Way to Feel Better

To minimize stomach upset or diarrhea, take mineral supplements with food.

For general health: For women, 5–15 mg per day; for men, 10–25 mg per day

Drug mugger dose: 15–25 mg per day

Just So You Know

Zinc and a sister mineral, copper, are both neurotransmitters in the brain and have an impact on our moods. We have elaborate systems that regulate these trace minerals, and when they tilt out of balance, our health and mood pay the price. The ratio of copper to zinc is far more clinically valuable than the concentration of either one. Too much zinc and you have a relative deficiency of copper. Too much copper and your blood levels of zinc are diminished, which can spark severe PMS, panic attacks, anxiety, ADHD, autismlike syndrome,

schizophrenia, hypomania, depression, personality changes, and even hallucinations.

Women at my lectures are always stunned when I tell them that the condition of estrogen dominance or the use of birth control pills can cause excessive copper (and zinc deficiency), leading to severe PMS and mood changes. It's a major "Aha!" I tell you this because many of these conditions are treated with psychoactive drugs. So many physicians never think to tease out a possible copper–zinc imbalance, which can be discovered with micronutrient testing. (See Resources on page [327](#) for information on nutritional testing.) When buying supplements, make sure you don't overdo zinc or copper. Sometimes you find supplements that combine these two important minerals in just the right ratio.

You know you're getting too much zinc if you develop nausea, stomach upset, joint pain, low blood pressure, urinary retention, diarrhea, or a metallic taste in your mouth.

Install a Nutrient Security System

I feel it's always best to absorb nutrients from our diets, and protein is important when it comes to zinc absorption. In particular, two amino acids, methionine and cysteine, improve the bioavailability of zinc. It's easy to get those if you eat animal proteins or make a protein supplement shake from whey, hemp, rice, or egg protein. Bread makes a difference, too. The zinc you get from whole grain products and plant proteins is less usable to you, thanks to their relatively high content of phytic acid, a substance that limits zinc absorption. Leavened whole grain breads have more bioavailable zinc than unleavened breads. And if you have a palate for oysters, by all means eat them! Oysters soar well above beef, which offers 6 mg an ounce to one oyster's 12 to 13 mg, and almonds, which offer about 1 mg an ounce.

What's in My Cupboard?

Pic-Mins by Thorne Research: This multimineral formula, made by a company known for its products' purity, contains

minerals in their most highly absorbable forms. It features 15 mg zinc picolinate, along with selenium, chromium, molybdenum, boron, and vanadium.

Cold-EEZE by Quigley: These are lozenges containing 13.3 mg ionic zinc (zinc gluconate glycine), a form of zinc that starts to get absorbed right in your mouth. The gluten-free lozenges have clinical trials behind them, and they come in a variety of flavors that taste great compared to zinc's natural metallic flavor. This company's product line is free of dyes, preservatives, and artificial sweeteners, and some are even USDA-certified organic. I like this all-natural product line so much that I served as a clinical consultant for the company during cough and cold season several years ago.

L-OptiZinc by Nutraceutical Sciences Institute (NSI): These capsules provide zinc in the form of zinc methionine, which enhances absorption compared to many other zinc supplements with the zinc sulfate form. Methionine helps the body in other ways, too. As you know, when minerals are bound (chelated) to amino acids, as in this case, they become more immediately available and usable and are less upsetting to the stomach. Each capsule contains 30 mg of zinc.

Zinc Copper by Solaray: These capsules are impressive because they contain zinc and copper in the bioavailable amino acid chelate form, along with iodine. All three minerals support the pancreas, thyroid, and breast tissue. This product helps you make an important antioxidant, superoxide dismutase, which can help squash free radicals. It contains some pumpkin seed extract as well. What I like most is that this company gets its zinc and copper chelates from whole rice concentrate rather than the typical yeast, milk, or soy products.

Zinc Balance by Jarrow Formulas: This formula is nice because it contains 15 mg of zinc in the zinc methionine form and 1 mg of copper gluconate, preserving that important zinc-to-copper ratio.

Calcium Magnesium Plus Zinc by Solgar: This combination of minerals works better together than alone. Solgar has combined 1,000 mg calcium (a combination of calcium carbonate, calcium gluconate, and calcium citrate)

with 400 mg of magnesium and 15 mg of zinc gluconate. I've included this one because it's a good trio and is easy to find.

Super Food by Bōku: This is a powerhouse green food supplement loaded with all the minerals you need, including zinc, enzymes, flaxseeds, probiotics, and powdered land and sea vegetables. It's a green drink, something I'm particularly fond of, as you know if you read my syndicated column. I mix a teaspoonful of it with a cup of natural organic apple juice each day to sweeten it a little. It is, in part, marine derived, so it contains many healthy ingredients to clear up all sorts of nagging symptoms. You might notice a difference in energy level after the first day or two, so it can be especially helpful if you take it right before athletic activity.

Spirulina Pacifica by Nutrex Hawaii: You can take this supplement by mouth as a tasteless tablet. It contains approximately 20 mg zinc in 3 tablets.

Part III

Getting the Most from Your Supplement

How to Pick a Great Supplement

My husband and I are both involved in health care. I am a writer and pharmacist who is passionate about natural medicine. Sam is a chiropractic physician. Between us, we have 40 years of clinical experience. We are both holistic practitioners and feel that drugs are overused and prescribed indiscriminately. Future generations may look back on this medicine-crazed time as barbaric.

As I was writing *Drug Muggers*, we both agreed that the number one health question we each receive in our respective professions is “How do I pick a great multivitamin?” Let’s face it: The role of good nutrition and healthy supplements in health cannot be overemphasized, and the need for authentic and pure supplements is at an all-time high. So we decided to include a chapter that will help you navigate the aisles of pharmacies and health food stores and pick the best top-quality supplements for your needs.

Confronting the dizzying array of dietary supplements and vitamins is daunting and confusing to our patients and readers. Both my husband and I are Internet savvy and have seen a plethora of Web sites that propagate false information and sell supplements that are of poor quality. We’ve also examined Web sites that purport to do consumer testing and post reports deeming certain proprietary brands to be better than others. Then we’ve found out that these supposedly “better” companies have paid to have their brand name products included on the lists. So how do you really know whom to trust and what companies are reliable?

I will help you sift through all the information and deception in the dietary supplement industry. In this chapter, you will become aware of the worst tricks in the industry so you can steer clear of—no, run from—poor-quality nutraceuticals. My goal is to teach you what to look for when you read vitamin labels.

Do You Need to Supplement?

Choices have consequences. For example, making the choice to smoke, drink, or lie on the couch watching TV every day rather than exercising eventually takes its toll. What about people who eat too many sweets, fried foods, and greasy burgers? An unhealthy diet does increase your need for supplementation. Let's get something clear, though. Even the best multivitamin supplement in the world can't make up for a lousy diet. It is a supplement, after all, not a remedy for bad habits. You have a choice, and you can choose to eat fewer processed and fattening foods and more "rabbit food."

Vitamins are present in fresh raw vegetables and fruits, to be sure. But in my opinion they aren't present in sufficient quantities to promote good health, reverse disease, or counteract all the toxins that surround us in the industrialized world we live in. Why is that? Our foods today are grown in mineral-devoid soils and riddled with pesticides and chemicals.

Many groups have special needs when it comes to nutrients. Women who are pregnant, nursing, or trying to conceive, for example, require larger amounts of certain nutrients to make sure their babies get the best start. And then there are senior citizens. Because levels of healthy nutrients and hormones decline in the elderly, they especially require added nutritional supplementation.

We all get vaccinated at birth and then take a slew of drugs throughout our lives, exposing ourselves to a continuous onslaught of unnatural chemicals. Many medications are drug muggers, often with the potential to slowly steal the life out of us. So the question isn't "Should I supplement?" Of course you should! The real question is "What are the best supplements to take to meet my individual needs?"

Why Do We Need Vitamins Anyway?

A common myth has it that if you eat well, you will automatically get all the vitamins and minerals you need solely from your food. Naturally I think you should eat a healthy diet.

But even if you eat fresh fruits and vegetables every hour, you still get only a fraction of the essential nutrients you need from those foods. Remember, those “fresh” fruits and veggies are often grown in mineral-deficient soils that contain a lot of pesticides. Then the produce sits for days at the grocery store. Then more time passes while it sits in your fridge. Then you microwave it or boil it too long. The bottom line is that the vitamins and minerals in today’s food supply have been greatly diminished by the time you eat them.

And let’s not forget the impact of sweets. People who eat processed foods containing refined white sugar (as opposed to stevia or agave sweeteners) will lose some B vitamins, zinc, chromium, magnesium, and other minerals. Yep, that’s right. White processed sugar is a drug mugger of minerals. And guess what? When you’re chronically low in certain minerals, you develop blood sugar problems. Hello, diabetes. Supplementing with trace minerals is smart if you have an insatiable sweet tooth. Conversely, sugar cravings can actually be caused by mineral and B vitamin deficiencies.

Let’s get back to vitamins. What exactly are they?

By themselves, vitamins don’t give you energy. They merely participate in the chemical reactions in the body that produce energy. They also boost your immune system; help you grow; and allow you to think, move, and stay alive. Thanks to vitamins you can see the world in color instead of in black and white. You can read thanks to the power of vitamins. It takes certain vitamins and minerals to keep your skeleton and your teeth strong. Vitamins help determine your mood, your attention span, even how well you ward off major illnesses like cancer.

Certain vitamins can determine what color your hair is and may play a part in premature graying. Some vitamins keep you from bleeding to death when you get a small cut. Vitamins and minerals are also cofactors, which means that they assist enzymes in their job of digesting your food. Think of a cofactor as your good buddy.

The list goes on and on. If you think you can put just any old vitamin into your body and get good results, then I’m glad

you're reading my book. Not all vitamins are created equal, as you will see. Think of a car: It needs gas to run well. Without enough fuel, it conks out. If you take cheap or second-rate vitamins, your body will conk out, too.

Think of banking, too. If you don't put away some money now, you won't have it to rely on later when you need it. It's the same with vitamins. If you don't store up a good nutritional stash that allows your cells to run optimally, how will you stay healthy in the long run? However, many vitamins—especially the water-soluble ones—are not stored in the body long-term. So you really do need to keep replenishing certain nutrients. In the case of calcium, for example, you need to bank enough of this mineral to help you maintain strong bones and teeth for a lifetime.

I'm not saying that vitamins and minerals are a cure-all, or that they prevent disease. But they are certainly a good place to start. They offer some insurance against the poor state of our food supply and the many drug muggers out there. Nutritional supplements should be considered one big piece of the health puzzle.

Apparently, I'm not alone in my thinking, because an estimated 50 to 60 percent of Americans take dietary supplements. If you've already recognized the importance of nutraceuticals, let me teach you how to pick high-quality supplements (and herbs, too).

Selecting a multivitamin presents a particular challenge. What makes the process so difficult and confusing is that many multivitamins are basically the same at their core. They all seem to contain a wide range of the B vitamins, some A, D, C, and E, and a few minerals. Brand after brand, you see the same basic stuff. But you can't read what's not printed on the label. You may not know that some nutrients—zinc and copper, for example—need to stay in balance with each other in a specific ratio. They are both extremely beneficial to the body, but they need to be taken properly. Taking a poorly formulated multivitamin could tilt your body chemistry in the wrong direction.

Of course, quality issues come up with all supplements, not just multivitamins. Just one example: You couldn't possibly know that some fish oils are taken from fish caught in contaminated waters, waters that contain PCBs, heavy metals, radioactive waste, and other toxins. This will not be on the label.

I feel a responsibility to share some of the secrets of this industry with you to help you get more supplement savvy. If you're going to spend the money and bother to take a supplement, you need to take a good one.

Making an Educated Choice

You need a well-rounded multivitamin to fuel your body and provide it with the nutrition it needs to carry out hundreds of chemical reactions every minute. You need a trustworthy supplement, and you may need to take it several times a day for the same reason that you eat several times a day. This is news to many people who take their multivitamins once daily. The reason is that your body takes what it needs of certain nutrients—the water-soluble vitamins—then you excrete the rest. With fat-soluble vitamins (like E, D, A, and K), it's a different story. You can store these for a while. So having a high-quality nutritional supplement on board is incredibly important to your general health and well-being.

The ideas that follow are going to raise some eyebrows because it's likely that they will raise some issues with your current multivitamin formula. I'm willing to bet there's a good chance that you're taking products that will not meet the standards outlined here. While most of these points are deal breakers for me, you may be willing to accept a lower-quality product because the price is lower, too. Just make sure that you don't fall for any of the worst tricks in the industry, which I'll get to after we look at some of the fairly common and less serious issues.

These Tricks Are Fairly Common

Here's an overview of vitamin industry negatives that you should know about and how to deal with them.

Don't take just 1 pill. Does your vitamin formula deliver all of its nutrition in a single dose? Multivitamins sometimes offer comprehensive once-daily tablets or softgels. Supplements and multivitamins that promise dozens of nutrients in one single dose can't possibly have the potency needed for good health or they would be humongous horse pills. You are being duped if you think you're getting the right amounts of all the essential nutrients needed for optimal health in a single pill. High-quality multivitamins may require 3 to 6 capsules a day to give you top protection 24/7.

Expect to pay. If you can get 1,000 pills for \$9.99, how good can they be? Are you getting a great deal or a great deal of junk? I get especially irked when I see companies preying on the most vulnerable and sickly segment of our population, the elderly. They produce vitamins of poor quality and sell them very inexpensively. The elderly are the very group of people who need the best supplements, not the cheapest ones!

Remember, the cost to produce vitamin supplements includes the bottle, label, shipping, marketing, and distribution. I'm not a mathematical genius, but how much money was left to invest in the quality of those vitamins if they only cost \$10?

Watch for additives. Many vitamins contain magnesium stearate, an inactive plant- or animal-based substance that is used widely in the manufacture of supplements. It has been used for decades, but it is usually not disclosed on the label if the level does not reach 1 percent of the total content. Let me just say up front that practically all supplements contain this, and I take supplements with this almost every day.

Magnesium stearate (a combination of magnesium and stearic acid) is often added to the formula to make it flow better during the manufacturing process. Some companies insist that stearates ensure proper encapsulation, although I disagree. I think you can have proper encapsulation without this additive. Some companies offer stearate-free supplements.

But, stearates increase profits for manufacturers because the company can generate more products in less time.

Even the best in the scientific field debate this issue as if it were politics. Some scientists insist that the magnesium stearate breaks down in the stomach, along with the rest of your supplement, when it meets strong acid and gets churned up for a while during digestion. Other scientists feel that magnesium stearate actually prevents proper breakdown and absorption of nutrients in your body. I'm undecided.

A study published in *Immunology* in 1990 suggested that stearic acid could suppress your immune system, making you more prone to infection. This study remains controversial to this day. Many scientists agree that it is a toxic substance, and others feel it is an innocuous additive. I doubt this issue will be settled in our lifetimes.

Some consumers are just plain sensitive to inactive ingredients like stearic acid, magnesium stearate, and ascorbyl palmitate. Supplement makers often call their products hypoallergenic or pure even though they contain manufacturing additives. It's confusing.

This particular additive is not a deal breaker for me. Some supplements containing magnesium stearate have otherwise fantastic formulas, and I've included them in this book. However, I recommend choosing supplements that are free of stearates if you have multiple chemical sensitivities or many allergies. Thorne Research has always boasted about its stearate-free product line (www.thorne.com).

Pay attention to allergens. Is your supplement free of common allergens? Whenever possible, you want your product to be free of wheat, gluten, dairy, corn, yeast, and soy. It should also be free of artificial colors, sweeteners, and preservatives. I've tried very hard to recommend products in each chapter that, to the best of my knowledge, are free of common additives and allergens.

Don't fall for the 100 percent claim. Your product may say that it provides 100 percent of the RDI (Reference Daily Intake) of key nutrients. The RDIs are based on the older term

you may be more familiar with, the RDAs (Recommended Dietary Allowances). RDI values are the amounts that medical science says will keep you from dying of a disease. *Woo-hoo!* I say, “So what?” Even if the supplement offers 100 percent of the RDI, you are still getting a very small amount of the nutrient you need.

These Tricks Are Worse. Be Warned!

Some of the vitamin industry’s practices present more cause for concern. Here’s how to protect yourself.

Know that more is not necessarily better. Is your product selling you a bill of goods, putting in everything but the kitchen sink? Despite promotional claims on the box, some nutrients may be present in negligible amounts. You have to be aware that some ingredients may be included just for show.

Pay attention to the delivery system. Is your formula a tablet, capsule, or powder? Many tablets are difficult to dissolve and often contain binders and preservatives. Capsules, preferably vegetarian capsules, and powders are much easier for you to assimilate.

Select a biologically active formula. Is your product in the right form, a form that is biologically active? Many vitamins contain the wrong form of a nutrient. Manufacturers may use a less active form because it’s cheaper to produce. For example, some vitamins exist in two forms, like mirror images of each other. Think of your left and right hands.

How do you know which is the correct form to buy? It’s a question of educating yourself, and this book will help you do that. Let’s look at vitamin E as an example of what I’m talking about. Your body wants the natural right-sided form (the right hand, if you will). This is designated with the letter “d.” So you want your supplement to offer you vitamin E as “d-alpha-tocopherol,” not the lab-created kind, “dl-alpha-tocopherol,” which is cheaper to produce. It is more biologically active in its “d” form. The highest-quality vitamin E supplements contain d-alpha-tocopherol along with the seven other variations of vitamin E collectively called “mixed tocopherols

and tocotrienols.” Remember that vitamin E is the name given to a family of eight molecules. So the very best brands have all eight in their formulas. Read the label and see what you have. Vitamins that come in the wrong form are definitely deal breakers for me.

Pay attention to quality control. Was your product tested and guaranteed for safety, purity, and potency? If so, it should say so on the label, or the company that manufactures it should be able to give you those assurances. The testing doesn’t necessarily have to be done by an independent testing company. I have seen some of those independent labs do a poor job, and some have questionable ethics.

Who manufactures the product? Is it contracted to the lowest bidder, or does the company selling the product actually make it? If it does, then ask if it follows the FDA’s good manufacturing practices and if it tests its raw materials. If so, another good question is: “Do you test your finished product for purity, label potency, and identity?” I like to know that my product comes with good quality assurance. I expect you do, too.

These Are the Worst Tricks. Run!

Finally, there are several vitamin industry practices that should send you running.

Be careful of false claims. Selling unique nutrients or herbal products that aren’t safe or well researched is deceptive advertising. Unfortunately, it’s also fairly common. Let’s consider horny goat weed as an example. Many men use this herb to ramp up their sex drive because they think it will help them get erections. I can’t find a single well-designed clinical trial that supports its use in men with erectile dysfunction, but the name sounds good, doesn’t it? And whether it works or not (because I’m not going to argue with you guys who rely on it), there was a study published in a 2004 issue of *Psychosomatics* that found a suspicious connection between the herb and two problems—racing, irregular heartbeat (tachyarrhythmia) and an uncomfortable feeling of agitation or irritability (hypomania).

How do you know whether a company is making exaggerated or false claims about one of its products? Again, you need to educate yourself and not rely solely on advertising hype to make your purchasing decisions.

Check for dissolvability. Does your formula meet pharmaceutical standards for complete disintegration? If it does, that means it meets USP (United States Pharmacopeia) guidelines. On occasion, a manufacturer will put a notation on the bottle about USP. By the way, the USP–National Formulary is really just a very thick cookbook of sorts that provides manufacturers and scientists with specific directions on manufacturing and testing all sorts of components, as well as information about how to test disintegration of a tablet. It doesn't ensure purity or effectiveness like some people think. You can learn more at www.usp.org.

Be on the lookout for problem ingredients. Is your product's formula free of ingredients that may gather in your tissues and cause an overdose problem? For example, some ingredients, such as preformed vitamin A (retinol), can accumulate in your tissues. This can happen if you take large quantities (greater than 25,000 IU) every day. It's different with beta-carotene. This nutrient goes on to form vitamin A in your body, and your body controls the conversion, so it won't accumulate like preformed vitamin A. Beta-carotene is a safer way to supplement vitamin A.

The mineral iron is another example. It accumulates over time and can be harmful in large doses—even in a single dose if the dose is large enough.

Some Formulas Are More Usable Than Others

I've saved the very worst for last. I'm about to teach you how to become the smartest health advocate for yourself and develop what I call "supplement savvy." If you really, truly want to improve your health and get the best vitamins for yourself, read on.

It's always best if your product is completely free of corn, wheat, gluten, soy protein, yeast, milk/dairy, sugar, salt, artificial colors, artificial flavors, and preservatives. A definite no-no on my list is artificial sweeteners! I see artificial sweeteners in many green powdered drinks, liquid supplements, and chewable tablets. You have to read the label to ferret out these ingredients. Just be aware that some products are nutritious and completely natural and others aren't.

Vitamins Don't Work Until Your Body Activates Them

The ingredient list on that vitamin label may be impressive, but the nutrients you take do nothing until your body activates them. Vitamin B₁₂, for example, is better when formulated as methyl B₁₂ or methylcobalamin, which your body can use immediately and to the fullest extent. So the question to ponder is "Is my supplement providing my nutrients in a healthy, body-ready, usable form?"

Many nutrients require this activation process. Sometimes it's done by acid in your stomach and sometimes it's another nutrient that's used as a cofactor. Either way, your body has to convert nutrients to an activated, usable form before they can be taken up by your cells. This process is complicated and requires stomach acid for absorption, something you may be suppressing with acid-blocking heartburn drugs.

You also need a strong, healthy gut that has a friendly camp of intestinal flora in order to make certain vitamins, such as folic acid, iron, CoQ10, riboflavin, and vitamin K. To make a long story short, your body goes through several processes including breakdown, absorption, activation, and microbial gut manufacturing just to make or fully use vitamins.

It's plain and simple. If you have health challenges, eat fast food, have gastrointestinal problems, or take acid blockers, then you are probably not able to activate or absorb all of your vitamins efficiently. This means that you are not getting as much benefit from them as you should. It also means that you

may need higher doses than the general population. It would be ideal for you to upgrade the quality of your supplements so that your vitamins come in activated forms. Basically, this means that they are handed to you on a silver platter.

If you're taking individual nutrients for therapeutic reasons, you'll need to educate yourself on the best forms to take. The chapters on individual nutrients in this book were designed to help you do just that. Consider vitamin B₆ as an example. Does your vitamin B₆ come in its active, usable form, pyridoxal 5'-phosphate (P5P), or is it just pyridoxine hydrochloride? Pyridoxine is fine, and I've taken it myself, but P5P is a step up because it does not require riboflavin (a sister B vitamin) to activate it. Does your vitamin B₁₂ supplement contain methylcobalamin (usable), or does it contain cyanocobalamin? Most brands contain cyanocobalamin, which is more difficult to use, so your body has to work harder to get to the active, healthy, usable form of the vitamin.

In Chapter 9, I went into great detail on folic acid. I did so because this nutrient protects unborn babies (our future generations), protects the heart, and guards against DNA damage, so it has some anticancer effects. You want to make sure you get enough folic acid, but not too much. Believe it or not, too much has the opposite effect and may contribute to cancer. That's the way it is when you get too much of a good thing; it backfires on you. So please use my information as guidance, but only take doses your doctor approves.

The point here is that folic acid isn't active until your body activates it. High-quality brands offer this nutrient in the active coenzyme form called folinic acid or the most active form, 5-methyltetrahydrofolate (5-MTHF). Those forms are easier to incorporate into your cells because they are body ready and instantly usable. Just to be clear, folic acid is *not* a questionable ingredient. It's totally fine. But 5-MTHF is better, but harder to find. The same is true of pyridoxine.

Who Wants to Eat Chalk, Then Get Cramps and Diarrhea?

Most vitamin companies maximize profits by using raw materials that are competitively priced. Is it the cheapest stuff they can get their hands on? On occasion. And it's not just the nutrients themselves that we need to be concerned about. The binders that manufacturers use can also be problematic. Most of the minerals in multivitamins and even stand-alone products, for example, are bound to inexpensive carriers to form a complex. That means that the mineral is chemically glued to another substance so that it can be made solid and put in a tablet or capsule. When a complex is delivered to your body, it gets broken down into its separate components. My issue with this is that most companies use the cheapest possible carriers. Some of these binders can have a negative impact on your health.

Calcium is found in many bone-building formulas, for example, but the type of calcium used is very inexpensive and bound to carbonate. You'll see it on the label as calcium carbonate. Sometimes you'll see it as bone meal, oyster shell, or dolomite. These forms of calcium salts are terribly tough for your body to absorb, and so very little calcium makes it into your bones, where you need it the most to prevent osteoporosis. They also require a great deal of stomach acid to break down. Many people don't produce enough acid in the first place, and others suppress their stomach acid with acid-blocking medications.

Calcium carbonate is the cheapest form of calcium to manufacture, and it's similar to the calcium carbonate that is used to make chalk for a chalkboard. When you buy calcium, you have to think of shopping. When you go shopping, you want the most bang for your buck. That's why you'll often choose a shirt or a belt that you can wear with many different outfits. It's the same with calcium and other minerals. You want the form of calcium that can be used in more than one place. Some high-quality companies offer a form of calcium that's chemically bound to another nutrient your body needs, usually an organic acid such as citrate, malate, aspartate, or gluconate. If you take calcium aspartate, the calcium goes to your bones and the organic acid (aspartate) is used to produce energy.

Choosing an intelligently formulated brand guarantees that you are getting a more biologically active and usable form of calcium. The easiest form of calcium to find is calcium citrate, but even this form can spark headaches and fatigue in certain sensitive people. Regardless, calcium citrate is much better for you than calcium carbonate since it gets to the bloodstream better.

You face the same kind of challenge when buying magnesium. Is it bound to oxide? Magnesium oxide is sold widely in most vitamin formulas, but it can cause diarrhea. Worse, it requires precious antioxidants from your cells to break down. What a useless way to spend your antioxidants, for breaking down a poor-quality product. You could buy magnesium amino acid chelate or spirulina, a superfood that is rich in this precious mineral. That's a smarter purchase. These formulas provide you with magnesium, which in turn lowers blood pressure, elevates mood, boosts energy, and relieves muscle aches and pains. It's a bargain if you think about what you're getting for your money. It's best to buy mineral supplements that confer multiple benefits.

You may also see magnesium chelate or sometimes magnesium glycinate on the ingredient label. Those are okay, too.

It should be noted that some people are sensitive to magnesium no matter what form it comes in and may experience diarrhea with any brand of magnesium. They should get it from a superfood or from leafy greens.

What Else Is in Your Formula?

We're not done yet. As I've already intimated, your supplements can contain a whole lot more than the simple nutrient or herbal formula you think you're purchasing. Here's a look at what else might be in there.

Coloring. It's shocking, but FDA-approved colorants include ground-up or powdered red beetles. No company would dare put that on the label. They camouflage it as carmine or cochineal extract, C.I. 75470, crimson lake, Natural

Red 4, E120, or “natural color.” These dyes impart the pretty pinkish or red color to almost all lipsticks. Yes, even natural ones. Aren’t insects natural? You also find carmine in red-colored drinks, ice cream, frozen ice pops, candy, and yogurt. If I want pink yogurt, I’ll add strawberries, thank you (!), because in my house I chase bugs down with a broom, not a spoon!

The artificial colors, designated as “FD&C” or “Lake,” are hair raising, too. To their credit, the FDA has banned some of these. FD&C Yellow No. 5 (also called tartrazine) and FD&C Blue No. 1 and No. 2 are problematic and may trigger asthma attacks, hives, or deadly allergic reactions. As far back as 1978 we knew this. A study published in *Clinical Allergy* showed what could happen upon oral administration of tartrazine. Scientists gave it to 122 patients and took note of the disturbing reactions. Here are just a few: weakness, palpitations, sensations of heat, blurred vision, runny nose, feelings of suffocation, and itchiness. There was also a noticeable activation of inflammatory pathways known to cause uncomfortable allergic reactions in the body. I can’t figure out why dyes like tartrazine are ever used in our foods when natural colors exist. A few of them include chlorophyll, beta-carotene, grape skin, natural astaxanthin, hibiscus, turmeric, annatto, and elderberry extract. There are also many others.



Make Sure Supplements Work for

You

When you purchase a supplement, are you sure it contains ingredients appropriate for you and that the dose is correct? Most consumers don’t know the answers to these questions. They trust that if an ingredient is on the label, it’s present in the formula in substantial amounts. In the case of herbs, people just assume that they’re extracted from the correct part of the plant. The active component of a plant differs from herb to herb. With saw palmetto, for example, the active part is extracted from the berries, not the root; but with ginger, it’s the root that’s most active.

Consider the hormone known as DHEA. Our bodies make this hormone. Companies also sell it in supplemental form. These are sometimes called “fountain of youth pills.” But did you know that some

products claim they work just like DHEA when they only contain wild yam? Wild yam does provide the starting materials for the body's synthesis of DHEA (and pregnenolone), but it doesn't act like DHEA. This conversion must take place in a lab!

The sleep hormone melatonin is not an herb, but where it's derived from certainly matters. Some "natural" forms of melatonin hormone are extracted from the brains of cows. Many people are allergic to this form, so in this case it's actually better to take a synthetic version. Another extremely popular dietary supplement, MSM (methylsulfonylmethane), is used for arthritis. This supplement should be derived from DMSO (dimethyl sulfoxide) in order to work properly.

Supplement makers know that consumers are generally not savvy, and they often list an ingredient even if it appears in a negligible amount or if it's extracted from the wrong portion of a plant. For example, unworthy supplements may state "ginkgo extract," whereas a high-quality supplement is proud to disclose the dosage as "40 mg ginkgo extract (leaf) standardized to 24 percent heterosides."

Bottom line: Educate yourself about the supplements you take. Then educate yourself some more. Let your health-care provider know about any supplements you take and find out whether there may be better choices to meet your needs.

Flavoring. Artificial flavors that sort of taste like banana or bubble gum help parents get otherwise yucky medicine into their toddlers. Why do we need those when Mother Nature provides natural flavors like mint, lemon, chocolate, and vanilla?

Sweeteners. Natural sweeteners that I recommend include stevia, coconut nectar, unrefined agave nectar, and molasses. But most supplements don't use these sweeteners. Instead, they contain things like cane sugar, mannitol, xylitol, or sorbitol and lab-created sweeteners like aspartame (NutraSweet, Equal) and sucralose (Splenda). Some scientists feel they damage brain cells, impair thinking, and cause migraines. Truvia is the latest patented sweetener to hit the market. It is derived and extracted from one of the leaves of the stevia plant. See *Diabetes without Drugs* for more on natural sweeteners.

Binders. A binder makes everything stick together. Examples include dextrose (a sugar) and polyethylene glycol. Incidentally, throw out anything that has the binder diethylene glycol (DEG) in it. The FDA recalled cough syrups and toothpastes because of this poison, which is used in antifreeze.

Humectants. These substances are used to prevent loss of water or drying of the skin. They make your lotions and creams feel smooth on your skin. One, called polyethylene glycol (PEG), is used in toothpastes to keep the paste from gunking up and to help it stay smooth and uniform. It's found in popular laxatives and bowel evacuation drugs like Colyte and Golytely.

The humectant called propylene glycol is found in paint and industrial antifreeze as well as medicine, shampoo, body lotion, and deodorant. Some studies suggest it may lead to nervous system damage, kidney damage, liver problems, and skin rash. The material safety data sheet that goes with this chemical warns about avoiding skin contact. Maybe because of the liver damage? So when you shampoo your hair, you're supposed to make sure not to get it on your skin? Yeah, right. I think bypassing these products is a better option.

Lubricants. The most common of these are stearates such as magnesium stearate. It's most often found in tablets, but a lot of capsules contain it, too. Magnesium stearate is not the same thing as the nutrient magnesium. Stearates help speed up the flow of the nutrient powder that's made into tablets or put into capsules. This speeds up the production line, but may reduce your absorption of the active goodies in your supplement or medicine.

Disintegrators. These ingredients help break down tablets. Cellulose (plant derived) is common, and so is sodium lauryl sulfate (SLS), which is currently under fire for its possible association with kidney and bladder damage and cancer. This chemical is found in floor cleaners and engine degreasers as well as personal care products and toiletries. Shampoo and soap often contain SLS. According to the American College of Toxicology's "Final Report on the Safety Assessment of Sodium Lauryl Sulfate," which was published in 1983, SLS "had a degenerative effect on the cell membranes because of its protein denaturing properties. High levels of skin penetration may occur at even low use concentration."

Did you know that SLS is actually used in clinical trials around the world to induce skin irritation so studies can be

performed? This is interesting also: Products intended for use on the skin should not contain more than 1 or 2 percent concentration of SLS, yet many shampoos, soaps, body washes, creams, and lotions have 10 to 20 percent!

Preservatives. These help to maintain freshness. It's worth watching out for anything containing parabens (propyl-, methyl-, butyl-, or ethyl-). A scientific screaming match about the use of parabens persists because some researchers still think they are safe despite emerging research that shows they disrupt human hormones and can even cause cancer. Other preservatives, including BHA, BHT, sorbic acid, and potassium sorbate, are also commonly found in supplements. Often they are in the raw materials used in a vitamin formula and are not listed on the label.

Fluoride. We find it in many products and even in the water system. Fluoride is prescribed to kids to protect their teeth and prevent cavities. Which reminds me, aren't virtually all toothpastes made with fluoride? Well, not all, but certainly most toothpastes contain it. As of April 7, 1997, the FDA requires that all fluoride toothpastes sold in the United States carry a poison warning on the label. It cautions users: "WARNING: Keep out of reach of children under 6 years of age. If you accidentally swallow more than used for brushing, seek professional help or contact a poison control center immediately."

What a disturbing surprise to learn that this chemical is also found in many roach-killing products, pesticides, and wood-preserving chemicals.

Buy Only from Trusted Sources

By now, you are probably either confused or upset. Call it tough love. That really wasn't my intention, but I do want to prompt you to think more about what you are putting into your body. For years I have been disturbed as I watched a multibillion-dollar industry take advantage of people. Consumers are willing to buy supplements because of great marketing campaigns, but what's inside the tablets they buy often comes up short. I bet you spend more time pondering

what you'll order for dinner at a restaurant than you do deciding what brand of vitamins to take. If you are counting on the dietary supplement industry to support your health and produce top-notch products, you are going to be sorely disappointed. Some genuinely care; some don't.

Vitamin and supplement makers have businesses to run. Even though there are many companies offering high-quality products made with integrity and purity, there are just as many others who are unscrupulous and want to sell you garbage. You have to be smart enough to learn the basics and insist on the best supplement in your price range. Most companies are banking on naive consumers who will buy anything with a pretty label, nice Web site, or fascinating infomercial. Now you know what to look for.

Purchase your supplements only from trusted sources, and bear in mind that some high-quality supplements are sold only through physicians' offices. This is because large retailers are not willing to pay a higher price to get quality products into their stores because you, the consumer, are always looking for a bargain. This forces first-rate supplement makers to sell their products to licensed practitioners who want to carry the better products. It's not always this way, but it's a good rule of thumb. As you may have learned, many good-looking labels don't pack a punch.

What Should You Do?

Start reading labels with your newfound knowledge. Look for pure and unadulterated formulas that are free of artificial colors, sweeteners, fillers, preservatives, and other unnecessary ingredients. I want you to take only exceptional supplements. There are many companies that are authentic, pure, and reputable. I've spent many years in this business, and I've done some of the legwork for you. I've been brutal in assessing the formulas I've recommended in each chapter, but I'm sure I've missed some really decent companies. Use your judgment and intuition, and recommendations from your naturopathic doctor. And do read the Resources chapter, which starts on page [327](#), because I've highlighted various

companies that really put their best foot forward and create innovative, high-quality supplements.

Daily Values

Some people are obsessed with meeting the USDA's Recommended Dietary Allowance (RDA) for each vitamin and mineral because they feel that getting 100 percent of the RDAs will equate to good health. Remember that I said in the previous chapter that the term RDA is outdated. It was used for many years, but you won't hear it much anymore. Scientists have begun referring to it as either the RDI (Reference Dietary Intake) or the DV (Daily Value). Here's a little bit more information about each of these terms.

RDI: Reference Dietary Intake

This is the minimum amount of a vitamin or mineral that the USDA recommends that a person consume each day. They feel it will cover virtually all American citizens' needs and prevent illnesses that result from deficiencies. For example, the RDI for vitamin C is about 100 mg per day. If you get that much, you won't develop scurvy, the deficiency disease. Just an FYI: You might also see RDI called DRI, for Dietary Reference Intake.

DV: Daily Value

This is just the RDI based on a 2,000-calorie-per-day diet. These recommendations were originally set up by government officials at the USDA. Some of them are nutritionists.

Looking Back in History

The RDA is a set of recommendations originally developed during World War II and is based on what our military needed. The suggested standards also applied to civilians and to people overseas. Scary as it sounds, food had to be rationed during the war, and nutritional guidelines took this into account when the USDA set up the original guidelines in the early 1940s.

By the 1950s, the USDA had created a new set of guidelines that included the number of servings of each food group needed in order for you to receive the recommended dosage of each nutrient.

The recommendations have evolved a little over the years. In the late 1990s, the RDA became part of a broader set of guidelines called the Reference Dietary Intake or the Daily Value. When you see 100 percent for the DV on any label, it certainly looks impressive, but many studies have shown the DV amounts to be woefully inadequate for certain needs.

Human beings have embedded genetic information about how much of any given vitamin they need. We are all genetically blueprinted, and some of us need more of one nutrient than other people. Individual needs are based on the genetic code, which contains SNPs (“snips”), or pieces of the code. My snip could mean that I need a hundred times more folate each day than your snip, which says you need less folate than the average person. It gets too complicated for this book, but the moral of the story is that each of us has unique nutrient needs.

Now look at the DVs on your typical multivitamin label (see page 320). It will likely say the product contains 100 percent of almost every nutrient. So it looks like a great supplement. But it’s not necessarily so. Look closer. You might see that the product provides only 30 IU of vitamin E. Since this meets 100 percent of the DV, you think you’re getting the right amount. But 100 percent of the DV for vitamin E doesn’t offer adequate protection for your brain or heart. Many studies show that you need at least 200 IU per day, even 800 IU for certain conditions.

Furthermore, if that 100 percent is a synthetic form of vitamin E, it works only half as well as natural vitamin E. (You can tell it’s synthetic if there’s a “dl” prefix rather than just a “d” in front of “alpha-tocopherol.” If the label says “d-alpha-tocopherol,” it means the product contains natural vitamin E.)

Not to pick on the typical multivitamin, but it also likely contains 100 percent of the DV for vitamin B₁₂ in the form of

cyanocobalamin. It's better if that particular nutrient comes as methylcobalamin, not cyanocobalamin. (Read about methylcobalamin on page 185 to learn more about vitamin B₁₂.) That formula probably contains about 6 mcg of B₁₂. That's a miniscule amount, and it won't do your body much good. You need at least 100 mcg of B₁₂, in the right, methyl form. Still, that 100 percent looks really impressive, doesn't it? Why should you care? Because a study published in *Neurology* in September 2008 concluded that getting inadequate amounts of B₁₂ can eventually shrink your brain. If you've been a subscriber to my syndicated column at www.DearPharmacist.com, you knew this 10 years ago.

Now back to that typical multivitamin. It likely contains unnecessary additives. One of them is propylene glycol. This chemical is found in antifreeze! I could go on and on. (Aren't you glad I'm on your side?) So let me share another problem I have with this typical formula. It's the colorant, FD&C Yellow No. 6. This yellow dye may not be as harmful as Yellow No. 5, which causes dermatitis, asthma, and hives in some people, but it has its own issues.

Supplement Facts

Serving Size 1 Tablet

	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate and 50% as beta-carotene)	5000 IU	100%
Vitamin C (as ascorbic acid)	400 IU	100%
Vitamin D (as cholecalciferol)	400 IU	100%
Vitamin E (as di-alpha tocopheryl acetate)	30 IU	100%
Thiamin (as thiamin mononitrate)	1.5 mg	100%
Riboflavin	1.7 mg	100%
Niacin (as niacinamide)	20 mg	100%
Vitamin B6 (as pyridoxine hydrochloride)	2.0 mg	100%
Folate (as folic acid)	400 mcg	100%
Vitamin B12 (as cynocobalamin)	6 mcg	100%
Biotin	30 mcg	10%
Pantothenic Acid (as calcium pantothenate)	10 mg	100%

Other ingredients: Gelatin, lactose, magnesium stearate, microcrystalline cellulose, FD&C Yellow No. 6, propylene glycol, propylparaben, and sodium benzoate.

Yellow No. 6 is on the product label we're considering here. Scientists are always running tests on food colorants (including this one) to determine whether they cause cancer. So far, Yellow No. 6 is FDA approved and appears not to cause cancer in lab rats. But here's my point: If they have to test these artificial colorants (the key word here is *artificial*) and there's even a question about their safety, do you really want to consume them when you have the choice not to? High-quality supplement makers don't pretty up their pills with potentially harmful colorants or dyes. Case closed.

Are Megadoses the Answer?

Taking megadoses (doses way above the Daily Value) of vitamins and minerals is not the answer either, and I certainly don't advocate it to any of my clients. I also don't advocate the one-pill-a-day concept that the makers of many multivitamins promote. My position is that the standards set by the RDIs for life-sustaining nutrients are extremely low and therefore are not enough to improve your health. The DV can serve as a starting point, but it's not the optimal amount you should have.

People get so hung up on these numbers and percentages, but they're only suggestions. Numbers aren't everything they're cracked up to be. In fact, numbers change at the convenience of big companies and organizations who wish to sell you something. After all, medicine is a business and they need customers. What's normal today wasn't normal 10 years ago. Thresholds representing normal values change routinely, as is the case with cholesterol. Hasn't the threshold for high cholesterol come down every few years, conveniently allowing sales of statin cholesterol drugs to explode?

I think people are more likely to become sick from cholesterol-lowering medication than they are from having slightly high cholesterol levels. We will one day look back on the days of statin mania with great remorse. Statins are drug muggers of coenzyme Q10, vitamin D, and minerals, and

you've learned how your body is affected by statin-induced depletion of these nutrients.

Why are so many Americans now taking statins? As I've said, I can't help but notice that the threshold for high cholesterol went way down as the statins came to market. Imagine that. Now there's a push to get 8-year-old kids on statins. When you reduce cholesterol, you also reduce the production of sex hormones. Here's what's next: Eighteen-year-old would-be studs who need Viagra to go with that statin.

But back to my point: I think people need much higher dosages of nutrients than the RDIs if they ever want to improve their health or reverse disease. Herein lies another issue. We have been indoctrinated to think that pills are the cure for every disorder. No matter what, we expect a prescription from the doctor. If he or she told us to go home, meditate, steam greens every day, and take up Pilates, we would be furious and find another doctor to give us a pill that lowers blood pressure.

As a pharmacist, I've noticed this exasperating trend. Some people want one magic pill to fix their poor lifestyle choices. There is no such pill at any pharmacy. We only have pills to mask the trouble, not fix it. If you continue to drink heavily, for example, doctors and pharmacists won't be able to do much for you once your pancreas and liver start failing. This is a pill-popping society, yet we have numerous campaigns that tell our children to "just say no" to drugs. Yeah, right, but first swallow your methylphenidate, which is an amphetamine similar to the street drug speed that is prescribed for hyperactivity disorders. But say no after that, okay, kiddies? *Puhleez.*

Our soils are virtually depleted of minerals and nutrients. Industrialization has contaminated our rain and our rivers. In case you haven't heard, many oceans and rivers are tainted with pharmaceuticals in addition to radioactive waste, mercury, and other toxins. Well, you can't live your life in fear, or in a glass bubble, but you can compensate and clean up your body. Eating right, exercising, and avoiding processed

foods is a good start. That's why it's so important to supplement with high-quality nutrients. If you're going to make the effort and investment, choose a good vitamin that is pure and active.

Why I Pay No Attention to the Numbers

Since the RDI does very little to advance your health, I have deliberately not put the chart of current RDIs in this book. I feel it would be a poor use of space. That said, you've seen my recommended dosages for general health in each chapter along with dosages that offset the drug mugger effect. Where possible, I listed doses for specific conditions, too. These are guidelines. If your doctor has a different suggestion for you, follow his or her instructions. Now I will tell you why I pay no attention to the RDI numbers.

The DV is a rough guide. It is based on meeting the needs of your average healthy person. Helloooo? Many people are not really healthy. They are dealing with numerous problems in their cells, arteries, glands, and organs. Often those problems have not even manifested yet. Before an individual is diagnosed with cancer, for example, it may have been growing for years. Before an infection like tuberculosis is discovered, an individual can have it for about 2 years and not know. Before you experience a heart attack, your arteries have been clogged and your body inflamed for years. Doesn't your mind start slipping years before you are diagnosed with Alzheimer's disease? Your bones and fingernails become brittle long before you fall and break your hip. I made a list of 10 of my friends, and not one enjoys perfect health. So all of us are really average healthy people until that lab test comes back abnormal and then, all of a sudden, we are sick. The DV doesn't take these issues into account.

DVs ignore special needs. DV thresholds don't take into account the needs of the elderly, children, pregnant women, lactating mothers, or people with disease. There are tremendous differences in what each of these populations requires. How can the government think that an 80-year-old

man in a nursing home needs just marginally more of a particular vitamin than an 18-year-old college student?

The DV is based on a 2,000-calorie-per-day diet. I visited the Web site for McDonald's, one of the world's most popular fast-food restaurant chains. It has a cool feature on its site that allows you to view ingredient information (a plus for those with allergies to wheat, soy, or dairy) and the nutritional content of its salads, sandwiches, breakfast meals, and the rest. When I viewed it recently, I found one Big Mac has 540 calories all by itself. If you order the Premium Crispy Chicken Club Sandwich instead, you're up to 630 calories. That's not including fries or a soda. And that's just one meal!

The science behind DVs is incomplete. The board that establishes DV recommendations admits that scientific knowledge of nutritional requirements is far from complete, that the requirements for many nutrients have not been established, and that many essential nutrients are not on the list. They suggest that we eat a varied diet and not depend on vitamins, pills, or processed foods. I agree with all of that. But even when we take all of that into account, I still have questions about those numbers.

Government studies have shown that the population nationwide is chronically deficient in magnesium. So I am at a loss to explain why the RDI for magnesium is only 420 for a male and 320 for a female over 31 years of age. (DVs, remember, are based on RDIs.)

Magnesium deficiency can cause high blood pressure, diabetes, depression, and heart attack. Does this sound like many residents of the United States? You bet it does. Just so you know, once flour is stripped and bleached to make all-purpose white flour, it no longer has nutritious levels of magnesium, and you need magnesium to control blood sugar. To make matters worse, many blood pressure pills, cardiac drugs, and diuretics are drug muggers of this mineral, which maintains normal heart rhythm too.

Early signs of magnesium deficiency include fatigue, numbness or tingling, cramps, and irritability. Magnesium is needed to help regulate insulin, and a shortage will contribute

to the development of diabetes. (See Chapter 12 for more on magnesium.) And yet, despite the epidemic of diabetes and heart disease and the fact that some of these cases might be due to magnesium deficiency, the government still suggests the measly Daily Value stated above. Furthermore, the board has not taken into account the needs of a population that is eating food grown in soils virtually devoid of minerals, especially important ones like magnesium.

The DV is not the same thing as personal nutritional requirements. People often confuse the two. There's no connection. Your genes dictate how much of a vitamin you need. Nutritional requirements vary from person to person. For example, some people have a tough time utilizing folate (a B vitamin) and therefore have deficiencies that result from their genetic makeup. A deficiency of this B vitamin leaves you prone to depression, heart disease, and a higher risk of cancer. It may also lead to birth defects in the babies of pregnant women. Supplementing with additional folic acid may prevent neural tube defects.

The RDI is based on people who live under normal circumstances. Unfortunately, our reality is one in which there is a lot of illness—cancer, heart disease, diabetes, autism. Our reality also includes being exposed to a boatload of environmental toxins starting the day we're born. We get vaccinated with multiple injections before we even leave the hospital as newborns, which taxes a brand-new, vulnerable immune system. It shocks me that many caring pediatricians recommend vaccines at birth, but advise against giving cereal to babies until they are 6 months old. It's not that I advocate cereal early on, because an infant's digestive process can't handle it. But I think that giving so many vaccines to infants should be approached with a shot of skepticism.

Our reality includes exposure to lots of chemicals. We ingest cancer-causing phthalates and bisphenol from plastics, chlorine from the water, bromide from bread, alloxan from white flour, parabens from our makeup and shampoo, and pesticides from our produce. The list goes on and on. It's unpleasant just thinking about it, but we cannot escape these

toxins as long as we live in an industrialized country. This is why we have to take the best care possible of our bodies.

So you tell me: Is the minimum amount of a nutrient enough to counter all of this? Is the DV really enough to keep us healthy in this type of industrialized society? I think not. The good news is that with this book I have armed you with the best protection of all—knowledge, and knowledge is power. When you absorb the message of this book, you will not fall prey to many of the hazards and drug muggers out there. It will help you care for your body more attentively. Your body is sacred. Take good care of it! It will feel better and you will look better for years to come. I've listed excellent products in each chapter in Part II, and you can read more about many of the companies that make them in the Resources chapter that follows.

Resources

Great Supplements: Companies That Put Their Best Foot Forward

You'll find only a handful of companies that are authentically great, that willingly share certification information, and that offer you truly good stuff. These companies offer a full line of nutraceuticals from A to Z. You can feel good about shopping for the nutrients you need from any one of the manufacturers I list here. You can search online at their Web sites or call the companies directly. Some are sold through doctors' offices only. Many are widely available at your local health food stores or pharmacies, and at grocery stores and natural health markets such as Whole Foods Market, Mother Earth's Storehouse, and the Vitamin Shoppe. For some, I have mentioned specialty formulas that I think are pure and helpful. Almost all of these companies offer their supplements in vegetarian capsules or offer products that are gluten free, dairy free, and yeast free. If any of these things concern you, please check each item.

Doctor's Data, Inc. or DDI

www.doctorsdata.com

800-323-2784

They have numerous tests and a very good one for evaluating heavy metals spilled through the urine. When I do heavy metal testing, I use their 24-Hour Urine Test because it seems to be the most accurate for heavy metals. Their tests are utilized in the assessment, detection, prevention, and treatment of heavy metal burden, but they also (like the other labs) offer excellent tests for nutritional deficiencies, environmental toxic burdens, gastrointestinal function, detoxification, and metabolic testing.

Douglas Laboratories

www.douglaslabs.com

800-245-4440

This company is an international leader in the dietary supplement industry. They have been in business for more than 50 years, and they manufacture their own line of supplements and hundreds of other proprietary blends. The supplements are manufactured with fine raw materials and under strict guidelines and ISO 9001-certified standards.

Dr. Ohhira's Probiotics

www.essentialformulas.com

They have an incredible blend of probiotics and prebiotics that are based on traditional Asian fermentation processes.

Probiotics 12 Plus is a truly unique blend that is safe for sensitive folks and gets through your stomach acid and down to your intestines, where you need it. This probiotic blend does not require refrigeration. It is sold at most health food stores.

EcoNugenics

www.econugenics.com

800-308-5518

If you go to this company's Web site, you'll find a number of products that are unique and pure. They are sticklers for detail and quality. One of their primary researchers is Isaac Eliaz, MD. He has created one product, PectaSol-C, out of the rinds of citrus fruits. Research done on this product has found it to be beneficial for prostate, breast, and colon cancers. It may help with all types of cancer. It's an absorbable form of soluble fiber that can latch on to tumors and help break them down. EcoNugenics also makes MycoPhyto Complex, which contains six potent varieties of medicinal mushrooms that are grown on immune-system-boosting herbs and organic brown rice. This product calms your immune function if you have an autoimmune disorder such as rheumatoid arthritis, lupus, multiple sclerosis, or

Sjögren's syndrome. It can also rev up your immune system if you have constant infections, chronic fatigue syndrome, AIDS-related infections, and so forth. Taking medicinal mushrooms can help your body in a way that no drug at the pharmacy can. MycoPhyto Complex activates your body's natural killer cells and boosts energy reserves, too.

Another star product this company makes is Padma Basic. It's an impressive blend of Tibetan herbs. In the United States, this product is a dietary supplement; overseas, it's sold as a drug. There is research to support Padma Basic's use in people with multiple sclerosis. (It helps prevent demyelination.) It's also helpful for reducing inflammation; unclogging sticky, cholesterol-laden arteries; and possibly delaying the need for a root canal. The research behind Padma Basic is lengthy and impressive.

Enzymatic Therapy

www.enzymatictherapy.com

800-783-2286

This company is a leader in nutrition with more than 250 health products. They pay attention to detail, and you have to love them for allowing regular people to schedule visits to their facility. They are in the Green Bay, Wisconsin, area, and unlike many companies, Enzymatic Therapy will send you certification on bacteriological testing. Because they are so committed to quality and their products are so easy to find at health food stores, I have featured many of them. They make smart and sensible blends of herbs and vitamins so you get the best of both worlds.

Enzymedica

www.enzymedica.com

888-918-1118

This company pays attention to detail and brings us outstanding enzymes to help us digest our food. I've written about them several times in my syndicated column because

I really like their plant-based line. A good all-around basic digestive enzyme that everyone could take is Digest. If you are gluten intolerant (celiac disease) and have concerns about a particular meal, you could take their GlutenEase, which grabs gluten out of the meal before you absorb it. Another star product is Natto-K (nattokinase), an enzyme that breaks up cysts and clots that could clog your arteries and contribute to a stroke. If you have allergies, try their MucoStop. It reduces the effects of histamine-induced misery. I met the president of Enzymedica, Tom Bohager, author of *Enzymes: What the Experts Know*, and he is as compassionate as he is brilliant. Every doctor should read his book to learn how to better serve his or her patients. It is also good for the educated consumer.

Genova Diagnostics

www.genovadiagnostics.com

800-522-4762

One of the best tests they offer is called NutrEval, and it is very comprehensive. Pages and pages of results show you your levels of key micronutrients and amino acids. The lab also offers another test for bone strength. This simple urine test examines compounds to help identify the current rate of bone loss, the presence of lytic bone disease, and the efficacy of bone support medications or treatments.

iNutritionals

www.inutritionals.com

800-647-6100

This company's product line was developed by a renegade neurologist, David Perlmutter, MD, author of *The Better Brain Book* and *Raise a Smarter Child by Kindergarten*. He's created a natural supplement called BrainSustain to improve memory and brain function. This synergistic blend of nutrients contains many brain savers, including alpha-lipoic acid, ginkgo biloba, phosphatidylserine, calcium, some B vitamins, CoQ10, and NAC. The nutrients in this

formula work together to help you maintain memory and mood. It protects you from the inside out because your brain cells will be less affected by toxic free radicals, which are basically molecular loose cannons that seek to destroy cells.

BrainSustain works by improving the energy production within each brain cell and increasing oxygen flow. You mix a scoop of powder in juice or water each day. I recommend this supplement for people who want to reduce the risks of free radicals, which have been associated with many neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, multiple sclerosis, ALS (Lou Gehrig's disease), and poor memory. Dr. Perlmutter makes a children's version of this product that may be helpful for kids with attention deficit problems.

LivingFuel

www.livingfuel.com

866-580-3835

This product line of supplements and foods is impressive not only in quality, but also in taste. I met the brain behind the brilliant line of goodies at an expo and got to sample his delicious products. His name is K. C. Craichy, and he is the author of *Super Health: 7 Golden Keys to Unlock Lifelong Vitality*. When you meet him, it's clear that he practices what he preaches. He looks incredibly healthy and fit. It's challenging to create healthy all-in-one supplements that taste good. Many superfoods and healthy supplements taste awful and are loaded with artificial sweeteners, toxic chemicals, sugar, and colors. This is not the case with LivingFuel. You simply mix the powder products with water to get hundreds of essential nutrients, minerals, and antioxidants. This is a great product to take daily as a complete or balanced meal or right before working out, like I do, or just because it supplies you with all the right nutrients for good health. It is an all-organic/non-GMO, nutrient-rich whole food. LivingFuel offers a delicious chocolate bar called CocoChia made with chia seeds (yes, just like the Chia Pet from the 1980s), which are high in

omega-3 essential fatty acids and very healthy for you. This chocolate bar is scrumptious. I'm not kidding. I hide them from my husband whenever we get a case. Another product they make is coffee, a safe and pure kind called SuperCoffee. It comes in a dropper bottle and you mix it with hot water. I'm totally serious. This is the freshest-tasting coffee I've ever had, and I take it with me whenever I travel. Their SuperEssentials Omega is an excellent source of vitamins A and D. I like this product because it also contains vitamin E, omega-3s, and the amazing antioxidant called astaxanthin.

Metametrix Clinical Laboratory

www.metametrix.com

800-221-4640

They have a large selection of excellent tests, and I find their GI Effects Complete test to be the very best when it comes to convenient stool testing for digestive problems like celiac disease, irritable bowel syndrome, and liver or pancreatic problems. They also offer tests to measure PCBs, phthalates, and porphyrins (this is very hard to find).

Metabolic Maintenance

www.metabolicmaintenance.com

800-772-7873

This company makes a full line of vitamin and herbal products using vegetarian capsules. They use active forms of vitamins in many cases. One of their products, Brain Cell Support, is a combination of natural herbs and amino acids that improves memory, cognitive function, and mood. Another good product for diabetes is DIM Complex, which helps reduce estrogen load in the body. If you find that you are deficient in one or two B vitamins, their B complex is a great supplement.

Nature Made

www.naturemade.com

800-276-2878

This line of supplements is sold widely at pharmacies and health food stores. Nature Made pays attention to quality and has a complete line of products called Rx Essentials. This specialty line is devoted to combating the drug mugging effect of medicine. They have formulas that help replenish lost nutrients if you happen to take heartburn medicines, statin cholesterol drugs, arthritis meds, antidepressants, or diabetes medicines.

Nordic Naturals

www.nordicnaturals.com

800-662-2544

This fresh and pure line of essential fatty acids (EFAs) was brought to the United States by a Norwegian man who was looking for high-quality fish oil and cod liver oil. He was accustomed to having these at his disposal in Norway, but when he moved here, it posed a challenge. So he formed his own company and is committed to quality and purity. He has dedicated his life to producing incredibly high-quality fish oils, which he sometimes combines with other wonderful ingredients like coenzyme Q10. Fish oils, however, are the foundation of the product line, which I have taken and enjoyed for many years. EFAs are not mugged by drugs, so there is no chapter on them. We don't make our own EFAs, but we still need them for good health. These fish-derived substances offer profound health benefits, including healthy cell membrane function and improved brain function and mood. They are also a powerful anti-inflammatory and can help with arthritis better than some medications can. There are many research studies on this topic available at the company's Web site. You can find this exceptional line at most health food stores and online.

Nutraceutical

www.solaray.com

800-669-8877

Solaray products are sold at most health food stores. They make a number of products, including a full line of B vitamins, minerals, antioxidants, and specialty products. I recommend their vitamin B₁, folic acid 800 mcg, and calcium citrate supplements.

Nutrex Hawaii

www.nutrex-hawaii.com

800-453-1187

This Hawaii-based company makes natural astaxanthin. That's a big word for a powerful antioxidant that is much more effective than vitamins E and C put together. Many who subscribe to my free newsletter or read my syndicated column know that I like astaxanthin. It's so helpful to so many people. It can improve vision, reduce arthritis, help control blood sugar, and unclog arteries. It comes from marine algae and is red. It actually puts the pink in flamingos and the red in lobsters! The makers have promised my readers a 25 percent discount on all orders as preferred customers for reading this book. Use coupon code 24. Nutrex Hawaii makes a wonderful super-food that contains spirulina, a blue-green algae from the sea that's loaded with nutrients, especially important minerals. If you take a drug mugger that robs you of beta-carotene, iron, or calcium, consider the fact that spirulina contains 3,900 percent more beta-carotene than carrots, 2,300 percent more iron than spinach, and 300 percent more calcium than milk. Spirulina is superfood for humans, not just sea critters. I think everyone should take astaxanthin and spirulina for good health even if they are not being mugged by a drug.

Pure Encapsulations

www.purecaps.com

800-753-2277

Pure Encapsulations only sells their products to licensed health-care providers, so you won't find this line at your health food store. Your doctor or other health-care practitioner can fax in his or her license to obtain products for you. Chiropractors, nurses, pharmacists, acupuncturists, or any other licensed provider can also obtain them for you, not just MDs. They are also sold online. Pure Encapsulations has a very high standard, and their supplements are sold internationally.

Solgar

www.solgar.com

877-765-4274

Solgar products are sold at most health food stores in dark amber glass bottles. The product line is vast, with supplements from A to Z. This is an affordable, easy-to-find brand if you want to shop at your local health food store.

SpectraCell Laboratories

www.spectracell.com

800-227-5227

This laboratory sells blood test kits that you take to your local lab or physician's office. The tests measure specific nutrients through lymphocytes and show intracellular function for the past 4 to 6 months. Traditional blood tests measure an instant in time, and that snapshot is usually misleading. SpectraCell also measures levels of important fatty acids. SpectraCell tests are so comprehensive that they can tell you exactly what nutrient you are deficient in. I didn't believe it at first, so I tried it myself and now I'm a believer. I found that I had been suffering the drug mugging effects of those hazelnut lattes Sam whips up for me.

If you only do one blood test a year, do a SpectraCell analysis. There are various tests available. The FIA 5000 will check your levels of vitamin D, all of your B vitamins,

calcium, magnesium, selenium, zinc, CoQ10, and glutathione.

You'll have to ask your doctor or practitioner to fax in his or her license to order their test kits for you.

Sunfood

www.sunfood.com

888-729-3663

One of this company's most interesting products is Ocean's Alive Marine Phytoplankton. This is concentrated raw food containing phytoplankton straight from the ocean. You get amazing nutritional benefits from superfoods like this. It's basically microalgae that contain 90 ionic and trace minerals without a lot of sodium. It's purified, so don't worry, and comes from a controlled ocean environment where it is carefully manufactured for human consumption. The intense chlorophyll content in this product detoxifies your body, chelates heavy metals, sends fuel to your muscles, and increases energy, heart health, and clarity. It gets right into your brain and improves functioning. While it does not contain a large amount of magnesium, the combination of all the minerals together in their live forms is perfect. I put a dropperful in water each day. It's completely tasteless.

Thorne Research

www.thorne.com

800-228-1966

Thorne offers a full range of herbal products using active and standardized ingredients without the lubricant magnesium stearate. They also sell vitamins, with an emphasis on men's and women's formulas and B vitamins; minerals; and medical foods for people with celiac disease or other digestive problems. Many of Thorne's products are available by phone or online. They are sometimes sold at holistic pharmacies, health food stores, and doctors' offices.

One of their specialty products, Deproloft, is an herb and vitamin combination used to boost mood and ease depression. I also like a fiber product called Arabinex, which comes from the larch tree. It improves gastrointestinal function. Fibrovive is helpful for people with muscle pain, muscle atrophy, or fibromyalgia. The company also makes various vitamin B formulas that contain the active forms of B₆ (P5P) and folic acid (5-MTHF). Most of the products offer body-ready, usable, active ingredients like these, and I appreciate that they combine the nutrients in an intelligent way using high-quality salts or amino acid chelates.

Turtle Mountain

www.sodeliciousdairyfree.com

866-388-7853

The So Delicious line of foods is produced by Turtle Mountain. They make many delicious products, all free of many common allergens, especially dairy foods. It's a challenge to find healthy novelty items and desserts that taste really amazing. I'm impressed with their products. I recommend their cultured coconut milk yogurts because they're rich in probiotics and calcium and are dairy free, soy free, and just plain yummy. One arm of their frozen dessert line, Purely Decadent, is made with coconut milk and is dairy free, soy free, and sweetened with natural agave syrup, something people with diabetes can have. If you have children, look for their Kidz pops in fudge and fruit flavors. They are free of the eight most common food allergens.

Vitamin Code

www.thevitamincode.com

866-465-0051

Vitamin Code vitamins were created by Jordan Rubin using whole food extracts. When you consume raw foods like fruits, vegetables, nuts, and seeds, you are getting the vitamins, minerals, probiotics, enzymes, and phytonutrients

in their most potent, unadulterated forms. Many experts believe that heating foods results in the loss of many nutrients and that whole food supplements give you nutrients most like what is present in nature. Your body can easily assimilate the nutrients into your bloodstream and maximize their potential. This product line caters to men and women, providing each with a comprehensive multivitamin.

Wakunaga of America

www.kyolic.com

800-421-2998

This company produces a fantastic brand of aged garlic, which is helpful for diabetes, heart disease, cholesterol, inflammation, and digestive problems. Aged garlic helps you fend off infections, improve circulation, lower cholesterol, and deal with cardiovascular problems. You name it, Wakunaga makes a garlic combination product for you. I appreciate their attention to detail and the fact that they use an active and standardized form of garlic. When you buy garlic, you want it to be active. They've also found a way to make it odorless. I like several of their products, including Kyo-Dophilus, a chewable probiotic that kids can take. Kyolic products are sold at most health food stores.

World Nutrition

www.energeticnutrition.com

888-501-3344

Vitälzym is a unique blend of enzymes. It contains various digestive enzymes, which break down food, as well as serrapeptase, which eats clots, cysts, and other gunk in your body. It homes in on problem areas (for example, fibroids or arthritic joints) and reduces inflammation. In addition, Vitälzym contains bromelain and papain (to reduce inflammation) and Indian gooseberry, which is a source of vitamin C and is great for your hair. As if that isn't good enough, Vitälzym contains rutin, a flavonoid that

strengthens capillaries and connective tissue. It helps protect blood vessels, reduce dark under-eye circles, and protect against viruses. It may also help with dozens of inflammatory and autoimmune conditions. The dosage varies based on your problems, but in general you should take Vitälzym on an empty stomach 45 minutes to an hour before eating, or 2 hours after eating.

Xymogen

www.xymogen.com

800-647-6100

This is a high-quality nutraceutical company that uses active B vitamins in their formulas, as well as amino acid mineral chelates and easy-to-swallow capsules. Xymogen products are manufactured in an FDA-certified laboratory and are high quality. The products are sold through physicians' offices or to licensed health-care providers. You can buy their products online as well.

ZRT Laboratory

www.zrtlab.com

866-600-1636

The founder of ZRT Laboratory is David Zava, PhD, a leading authority on hormones and coauthor of several excellent books, including *What Your Doctor May Not Tell You about Breast Cancer*. I've met him, and he is very genuine about helping you get in the driver's seat of your own health. That's why he puts you in charge of getting your lab tests done, tests that will provide insight into your cells.

ZRT can do saliva testing and/or blood spot testing (a finger stick is all you need) to determine accurate levels of hormones such as estrogen, estrone, testosterone, DHEA, vitamin D, cortisol, PSA, SHBG, and many others. I really like this company because they sell directly to you and their tests are a cinch. You just collect saliva or do a little finger

blood test, and you can see exactly what's going on in your body.

Just go to the Web site, look at the symptom checklist, and decide which kit is right for you. Their staff is sometimes available by phone, but most people can navigate their site with ease. The test kits are sent to your home with very specific instructions. Read them twice to make sure you do everything right. You mail back your samples in a prepaid envelope, and in a couple of weeks, ZRT sends you back boatloads of great health information that you can share with your practitioners.

References

- Adams, P. W., et al. "Effect of Pyridoxine Hydrochloride (Vitamin B₆) upon Depression Associated with Oral Contraception." *Lancet* 1973, 301: 897–904.
- Aiba, Y., et al. "Lactic Acid-Mediated Suppression of *Helicobacter pylori* by the Oral Administration of *Lactobacillus salivarius* as a Probiotic in a Gnotobiotic Murine Model." *American Journal of Gastroenterology* 1998, 93 (11): 2097–101.
- Albanes, D., et al. "Alpha-Tocopherol and Beta-Carotene Supplements and Lung Cancer Incidence in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study: Effects of Base-Line Characteristics and Study Compliance." *Journal of the National Cancer Institute* 1996, 88: 1560–70.
- Almeida, J. C. "Coma from the Health Food Store: Interaction Between Kava and Alprazolam." *Annals of Internal Medicine* 1996, 125:940–41.
- Aymard, J. P., et al. "Haematological Adverse Effects of Histamine H₂-Receptor Antagonists." *Medical Toxicology and Adverse Drug Experience* 1988, November–December, 3(6): 430–48.
- Babaei-Jadidi, R., et al. "Prevention of Incipient Diabetic Neuropathy by High-Dose Thiamine and Benfotiamine." *Diabetes* 2003, 52: 2110–20.
- Báez-Saldaña, A., et al. "Biotin Deficiency in Mice Is Associated with Decreased Serum Availability of Insulin-Like Growth Factor-I." *European Journal of Nutrition* 2009, April, 48(3): 137–44.
- Baggott, J. E., et al. "Inhibition of Folate-Dependent Enzymes by Non-Steroidal Anti-Inflammatory Drugs." *Biochemical Journal* 1992; 282: 197–202.
- Bartle, W. "Grapefruit Juice Might Still Be Factor in Warfarin Response" [letter]. *American Journal of Health-System Pharmacy* 1999, April, 56 (7): 676.

- Bartsch, C., et al. "Prostate Cancer and Tumor Stage-Dependent Circadian Neuroendocrine Disturbances." *Aging Male* 1998, 1(3): 188–99.
- Baum, M. K., et al. "Selenium and Interleukins in Persons Infected with Human Immunodeficiency Virus Type 1." *Journal of Infectious Diseases* 2000, September, 182 Suppl 1: S69–73.
- Beall, D. P., Scofield, R. H. "Milk-Alkali Syndrome Associated with Calcium Carbonate Consumption. Report of 7 Patients with Parathyroid Hormone Levels and an Estimate of Prevalence among Patients Hospitalized with Hypercalcemia." *Medicine (Baltimore)* 1995, March, 74(2): 89–96.
- Beard, J., Borel, M., Derr, J. "Impaired Thermoregulation and Thyroid Function in Iron Deficiency Anemia." *American Journal of Clinical Nutrition* 1990, 52: 813–19.
- Beard, J., Borel, M., Peterson, F. J. "Changes in Iron Status During Weight Loss with Very-Low-Energy Diets." *American Journal of Clinical Nutrition* 1997, 66: 104–10.
- Bec, M. A., Levander, O. A., and Handy, J. "Selenium Deficiency and Viral Infection." *Journal of Nutrition* 2003, May (5 Suppl 1): 1463–67.
- Bernstein, A. L. "Vitamin B₆ in Clinical Neurology." *Annals of the New York Academy of Sciences* 1990, 585: 250–60.
- Bethke, L. "Functional Polymorphisms in Folate Metabolism Genes Influence the Risk of Meningioma and Glioma." *Cancer Epidemiology, Biomarkers and Prevention* 2008, 17(5): 1195–202.
- Bhakta, M., et al. "Oral Calcium Supplements Do Not Affect the Progression of Aortic Valve Calcification or Coronary Artery Calcification." *Journal of the American Board of Family Medicine* 2009, 22(6): 610–16.
- Blum, M., et al. "[Oral Contraceptive Lowers Serum Magnesium.]" *Harefuah* 1991, 121: 363–4 [in Hebrew].

- Boehnke, C., et al. "High-Dose Riboflavin Treatment Is Efficacious in Migraine Prophylaxis: An Open Study in a Tertiary Care Centre." *European Journal of Neurology* 2004, July, 11(7): 475–77.
- Boers, G. H. "Hyperhomocysteinaemia: A Newly Recognized Risk Factor for Vascular Disease." *Netherlands Journal of Medicine* 1994, 45: 34–41.
- Bovell-Benjamin, A. C., et al. "Iron Absorption from Ferrous Bisglycinate and Ferric Trisglycinate in Whole Maize Is Regulated by Iron Status." *American Journal of Clinical Nutrition* 2000, June, 71(6): 1563–69.
- Brady, J. A., Rock, C. L., Horneffer, M. R. "Thiamine Status, Diuretic Medications and the Management of Congestive Heart Failure." *Journal of the American Dietetic Association* 1995, 95: 541–44.
- Brinker, F. *Herb Contraindications and Drug Interactions*, 2nd ed. Sandy, OR: Eclectic Medical Publications, 1998.
- Broome, C. S., et al. "An Increase in Selenium Intake Improves Immune Function and Poliovirus Handling in Adults with Marginal Selenium Status." *American Journal of Clinical Nutrition* 2004, July, 80(1): 154–62.
- Burnham, B. E. "Garlic as a Possible Risk for Postoperative Bleeding." *Plastic and Reconstructive Surgery* 1995, 95: 213.
- Campbell, N. R., Hasinoff, B. B. "Iron Supplements: A Common Cause of Drug Interactions." *British Journal of Clinical Pharmacology* 1991, 31: 251–55.
- Cannell, J. J. "The Truth about Vitamin D Toxicity." Vitamin D Council, 2009.
- Carlson, L. A., Hamsten, A., Asplund, A. "Pronounced Lowering of Serum Levels of Lipoprotein Lp(a) in Hyperlipidaemic Subjects Treated with Nicotinic Acid." *Journal of Internal Medicine* 1989, 226: 271–76.
- Celec, P., Behuliak, M. "Behavioural and Endocrine Effects of Chronic Cola Intake." *Journal of Psychopharmacology* 2009, May 7[Epub ahead of print].

- Chen, M. F., et al. "Effect of Glycyrrhizin on the Pharmacokinetics of Prednisolone Following Low Dosage of Prednisolone Hemisuccinate." *Endocrinologia Japonica* 1990, 37: 331–41.
- Cina, S. J., Russell, R. A., Conradi, S. "Sudden Death Due to Metronidazole/Ethanol Interaction." *American Journal of Forensic Medicine and Pathology* 1996, 17 (4): 343–46.
- Consumerlab.com/results/index.asp.
- Crouse, J. R., 3rd. "New Developments in the Use of Niacin for Treatment of Hyperlipidemia: New Considerations in the Use of an Old Drug." *Coronary Artery Disease* 1996, April, 7(4): 321–26.
- Danovaro, R., et al. "Sunscreens Cause Coral Bleaching by Promoting Viral Infections." *Environmental Health Perspectives* 2008, 116: 441–47.
- Davis, R., Markham, A., Balfour, J. A. "Ciprofloxacin: An Updated Review of Its Pharmacology, Therapeutic Efficacy and Tolerability." *Drugs* 1996, 51: 1019–74.
- De Lau, L. M., et al. "Dietary Folate, Vitamin B₁₂ and Vitamin B₆ and the Risk of Parkinson's Disease." *Neurology* 2006, 67(2): 315–18.
- De Vrese, M., et al. "Effect of *Lactobacillus gasseri* PA 16/8, *Bifidobacterium longum* SP 07/3, *B. bifidum* MF 20/5 on Common Cold Episodes: A Double Blind, Randomized, Controlled Trial." *Clinical Nutrition* 2005 August, 24(4): 481–91.
- Dickinson, D. A., et al. "Curcumin Alters EpRE and AP-1 Binding Complexes and Elevates Glutamate-Cysteine Ligase Gene Expression." *FASEB Journal* 2003, 17(3): 473–75.
- Drown, D. J. "Vitamin D Deficiency in the United States: A Growing Epidemic with Serious Health Consequences." *Progress in Cardiovascular Nursing* September 2009, 24(3): 117–18.

- Ebadi, M., et al. "Peroxynitrite in the Pathogenesis of Parkinson's Disease and the Neuroprotective Role of Metallothioneins." *Methods in Enzymology* 2005, 396: 276–98.
- Elam, M. B., et al. "Effect of Niacin on Lipid and Lipoprotein Levels and Glycemic Control in Patients with Diabetes and Peripheral Arterial Disease. The ADMIT Study: A Randomized Trial." *JAMA* 2000, 284(10): 1263–70.
- El-Dermerdash, E., Mohamadin, A. M. "Does Oxidative Stress Contribute in Tricyclic Antidepressants-Induced Cardiotoxicity?" *Toxicology Letters* 2004, September 10, 152(2): 159–66.
- Elisaf, M., Milionis, H., Siamopoulos, K. "Hypomagnesemic Hypokalemia and Hypocalcemia: Clinical and Laboratory Characteristics." *Mineral and Electrolyte Metabolism* 1997, 23:105–12.
- "Facts and Comparisons." *Review of Natural Products*, CliniSphere 2.0. New York: Wolters Kluwer Company, 2000.
- Mikhailov, V. V., Mikhailov, V. V., Avakumov, V. M. "[Mechanism of the Effect of Methylcobalamin on the Recovery of Neuromuscular Functions in Mechanical and Toxic Denervation.]" *Farmakologia i Toksikologija* 1983 November, 46(6): 9–12[in Russian].
- Farmer, J. A. "Simvastatin With or Without Ezetimibe in Familial Hypercholesterolemia." *Current Atherosclerosis Reports* 2009, March, 11(2): 81–82.
- Fenton, P. F., et al. "The Nutrition of the Mouse VIII. Studies on Pantothenic Acid, Biotin, Inositol and P-Aminobenzoic Acid." *American Journal of Clinical Nutrition* 1950, June, 42(2): 257–69.
- Ferenci, P., et al. "Randomized Controlled Trial of Silymarin Treatment in Patients with Cirrhosis of the Liver." *Journal of Hepatology* 1989, July, 9(1): 105–13.
- Flatley, J. E., et al. "Folate Status and Aberrant DNA Methylation Are Associated with HPV Infection and

- Cervical Pathogenesis.” *Cancer Epidemiology, Biomarkers and Prevention* 2009, October, 18(10): 2782–89.
- Flynn, M. A., et al. “Atherogenesis and the Homocysteine-Folate-Cobalamin Triad: Do We Need Standardized Analyses?” *Journal of the American College of Nutrition* 1997, 16: 258–67.
- Fohr, I. P., et al. “5,10-Methylenetetrahydrofolate Reductase Genotype Determines the Plasma Homocysteine-Lowering Effect of Supplementation with 5-Methyltetrahydrofolate or Folic Acid in Healthy Young Women.” *American Journal of Clinical Nutrition* 2002, 75: 275–82.
- Folkers, K., et al. “Activities of Vitamin Q10 in Animal Models and a Serious Deficiency in Patients with Cancer.” *Biochemical and Biophysical Research Communications* 1997, May 19, 234(2): 296–99.
- Folkers, K., Simonsen, R. “Two Successful Double-Blind Trials with Coenzyme Q10 (Vitamin Q10) on Muscular Dystrophies and Neurogenic Atrophies.” *Biochimica et Biophysica Acta* 1995, May 24, 1271(1): 281–86.
- Folkers, K., Yamamura, Y. “Italian Multi-Center Study on the Efficacy and Safety of Coenzyme Q10 as Adjuvant Therapy in Heart Failure.” *Journal of Molecular Medicine* 1992, 4: 291–330.
- Forsythe, P., Inman, M. D., and Bienenstock, J. “Oral Treatment with Live *Lactobacillus reuteri* Inhibits the Allergic Airway Response in Mice.” *American Journal of Respiratory and Critical Care Medicine* 2007, 175: 561–69.
- Fortin, L. J., Genest, J. “Measurement of Homocysteine in the Prediction of Arteriosclerosis.” *Journal of Cellular Biochemistry* 1995, 28: 155–62.
- Freeman, J. M., et al. “Does Carnitine Administration Improve the Symptoms Attributed to Anti-convulsant Medications? A Double-Blinded, Crossover Study.” *Pediatrics* 1994, 93: 893–95.

- Frye, P. E., Arnold, L. E. "Persistent Amphetamine-Induced Compulsive Rituals: Response to Pyridoxine (B₆)."
Biological Psychiatry 1981, 16: 583–87.
- Furlanetto, T. W., et al. "Estradiol Decreases Iodide Uptake by Rat Thyroid Follicular FRTL-5 Cells." *Brazilian Journal of Medical and Biological Research* 2001, 34: 259–63.
- Furlanetto, T. W., et al. "Estradiol Increases Proliferation and Down-Regulates the Sodium/Iodide Symporter Gene in FRTL-5 Cells." *Endocrinology* 140(12): 5705–11.
- Gadkari, J. V., Joshi, V. D. "Effect of Ingestion of Raw Garlic on Serum Cholesterol Level, Clotting Time and Fibrinolytic Activity in Normal Subjects." *Journal of Postgraduate Medicine* 1991, 37: 128–31.
- Gannon, M. C., et al. "Effect of Added Fat on Plasma Glucose and Insulin Response to Ingested Potato in Individuals with NIDDM." *Diabetes Care* 1993, 16: 874–80.
- Garfinkel, D., et al. "Facilitation of Benzodiazepine Discontinuation by Melatonin: A New Clinical Approach." *Archives of Internal Medicine* 1999, 159: 2456–60.
- Garg, S. K., et al. "Effect of Grapefruit Juice on Carbamazepine Bio-Availability in Patients with Epilepsy." *Clinical Pharmacology and Therapeutics* 1998, 64: 286–88.
- Gärtner, R., et al. "Selenium Supplementation in Patients with Autoimmune Thyroiditis Decreases Thyroid Peroxidase Antibodies Concentrations." *Journal of Clinical Endocrinology and Metabolism* 2002, April, 87(4): 1687–91.
- Gennari, C. "Differential Effect of Glucocorticoids on Calcium Absorption and Bone Mass." *British Journal of Rheumatology* 1993, 32 (Suppl 2): 11–14.
- Greb, A., Bitsch, R. "Comparative Bioavailability of Various Thiamine Derivatives after Oral Administration." *International Journal of Clinical Pharmacology and Therapeutics* 1998, 36: 216–21.

- Grundy, S. M., et al. "Efficacy, Safety, and Tolerability of Once-Daily Niacin for the Treatment of Dyslipidemia Associated with Type 2 Diabetes: Results of the Assessment of Diabetes Control and Evaluation of the Efficacy of Niaspan Trial." *Archives of Internal Medicine* 2002, 162: 1568–76.
- Haase, H., Rink, L. "The Immune System and the Impact of Zinc During Aging." *Immunity and Ageing* 2009, June 12, 6: 9.
- Hamilton-Craig, I., et al. "At Sea with SEAS: The First Clinical Endpoint Trial for Ezetimibe, Treatment of Patients with Mild to Moderate Aortic Stenosis, Ends with Mixed Results and More Controversy." *Heart, Lung and Circulation* 2009, 18(5): 343–46.
- Hamilton-Craig, I., et al. "Simvastatin With Or Without Ezetimibe in Familial Hypercholesterolemia." *New England Journal of Medicine* 2008, July 31, 359(5): 531.
- Harris, J. E. "Interaction of Dietary Factors with Oral Anticoagulants: Review and Applications." *Journal of the American Dietetic Association* 1995, 95: 580–84.
- Helmholtz Association of German Research Centers. "High Blood Levels of Vitamin D Protect Women from Breast Cancer, Study Suggests." *Science Daily* 2008, April 22.
- Hernández-Lahoz, C., et al. "[Sustained Clinical Remission in a Patient with remittent-Recurrent Multiple Sclerosis and Celiac Disease Gluten-Free Diet for 6 Years.]" *Neurologia* 2009, April, 24(3): 213–15[in Spanish].
- Hokin, B. D., Butler, T. "Cyanocobalamin (Vitamin B₁₂) Status in Seventh-Day Adventist Ministers in Australia." *American Journal of Clinical Nutrition* 1999, September, 70:576S–78S.
- Holt, G. A. *Food and Drug Interactions*. Chicago: Precept Press, 1998. pp. 197–98.
- Hoorn, E. J., et al. "A Case Series of Proton Pump Inhibitor-Induced Hypomagnesemia." *American Journal of Kidney Diseases* 2010, July, 56(1): 112–16.

- Houston, J. B., Levy, G. “Drug Biotransformation Interactions in Man: Acetaminophen and Ascorbic Acid.” *Journal of Pharmaceutical Sciences* 1976, 65: 1218–21.
- Huang, S. M., Lesko, L. J. “Drug-Drug, Drug-Dietary Supplement, and Drug-Citrus Fruit and Other Food Interactions: What Have We Learned?” *Journal of Clinical Pharmacology* 2004, 44: 559–69.
- Illingworth, D. R., et al. “Comparative Effects of Lovastatin and Niacin in Primary Hypercholesterolemia.” *Archives of Internal Medicine* 1994, 154: 1586–95.
- Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: Calcium, Phosphorus, Magnesium, Vitamin D and Fluoride*. Washington, DC: National Academy Press, 1999.
- Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline*. Washington, DC: National Academy Press, 1998.
- Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc*. Washington, DC: National Academy Press, 2001.
- Jabbar, M. A., Larrea, J., Shaw, R. A. “Abnormal Thyroid Function Tests in Infants with Congenital Hypothyroidism: The Influence of Soy-Based Formulas.” *Journal of the American College of Nutrition* 1997, 16: 280–82.
- Jacob, S. E., Stechschulte, S. “Formaldehyde, Aspartame, and Migraines: A Possible Connection.” *Dermatitis* 2008, 19(3): E10–E11.
- Jiang, R., et al. “Consumption of Cured Meats, Lung Function and Chronic Obstructive Pulmonary Disease among US Adults.” *American Journal of Respiratory and Critical Care Medicine* 2007, 175: 798–804.
- Judy, W. V., et al. “Double Blind-Double Crossover Study of Coenzyme Q10 in Heart Failure.” In: Folkers K.,

- Yamamura Y., eds. *Biomedical and Clinical Aspects of Coenzyme Q*. Amsterdam: Elsevier, 1986. pp. 315–23.
- Juurlink, D. N., et al. “Adverse Cardiovascular Events during Treatment with Pioglitazone and Rosiglitazone: Population Based Cohort Study.” *British Medical Journal* 2009, 339:b2942.
- Kabir, A. M., et al. “Prevention of *Helicobacter pylori* Infection by Lactobacilli in a Gnotobiotic Murine Model.” *Gut* 1997, 41 (1): 49–55.
- Kabuto, M., Namura, I., Saitoh, Y. “Nocturnal Enhancement of Plasma Melatonin Could Be Suppressed by Benzodiazepines in Humans.” *Endocrinologia Japonica* 1986, June, 33(3): 405–14.
- Kamikawa, T., et al. “Effects of Coenzyme Q10 on Exercise Tolerance in Chronic Stable Angina Pectoris.” *American Journal of Cardiology* 1985, 56: 247–51.
- Karmini, K., et al. “*Lactobacillus reuteri*–Induced Regulatory T Cells Protect Against an Allergic Airway Response in Mice.” *American Journal of Respiratory and Critical Care Medicine* 2009, 179: 186–93.
- Kaptan, K., et al. “*Helicobacter pylori*: Is It a Novel Causative Agent in Vitamin B₁₂ Deficiency?” *Archives of Internal Medicine* 2000, May 8, 160: 1349–53.
- Kiff, R. S., Wuick, C. R. G. “Does Inositol Nicotinate Influence Intermittent Claudication?” *British Journal of Clinical Practice* 1988, 42: 141–45.
- Kleijnen, J., Knipschild, P. “*Ginkgo biloba*.” *Lancet* 1992, 340: 1136–39.
- Kohaar, I., et al. “Homocysteine Levels Are Associated with Cervical Cancer Independent of Methylene Tetrahydrofolate Reductase Gene (MTHFR) Polymorphisms in Indian Population.” *Biomarkers* 2010, February, 15(1): 61–68.
- Koutkia, P., Chen, T. C., Hollick, M. F. “Vitamin D Intoxication Associated with an Over-the-Counter

- Supplement.” *New England Journal of Medicine* 2001, July 5, 345(1): 66–67.
- Kozielec, T., Starobrat-Hermelin, B. “Assessment of Magnesium Levels in Children with Attention Deficit Hyperactivity Disorder (ADHD).” *Magnesium Research* 1997, June, 10(2): 143–48.
- Kuwabara, S., et al. “Intravenous Methylcobalamin Treatment for Uremic and Diabetic Neuropathy in Chronic Hemodialysis Patients.” *Internal Medicine* 1999, 38(6): 472–75.
- Lacy, C. F., et al. *Lexi-Drugs*. Hudson, OH: Lexi-Comp, 2006.
- Landbo, C., Almdal, T. P. “[Interaction between Warfarin and Coenzyme Q10.]” *Ugeskrift for Laeger* 1998, 160(22): 3226–27 [in Danish].
- Langsjoen, P., Vadhanavikit, S., Folkers, K. “Response of Patients in Classes III and IV of Cardiomyopathy to Therapy in a Blind and Crossover Trial with Coenzyme Q10.” *Proceedings of the National Academy of Sciences* 1985, 82: 4240–44.
- Lawrence, V. A., Loewenstein, J. E., and Eichner, E. R. “Aspirin and Folate Binding: In Vivo and In Vitro Studies of Serum Binding and Urinary Excretion of Endogenous Folate.” *Journal of Laboratory and Clinical Medicine* 1984, 103: 944–48.
- Lee, I. M., et al. “Beta-Carotene Supplementation and Incidence of Cancer and Cardiovascular Disease: The Women’s Health Study.” *Journal of the National Cancer Institute* 1999, 91: 2102–6.
- Leibovich, E. R., Deamer, R. L., Sanserson, L. A. “Food-Drug Interactions: Careful Drug Selection and Patient Counseling Can Reduce the Risk in Older Patients.” *Geriatrics* 2004, 59: 19–33.
- Leklem, J. E. “Vitamin B₆.” In: Shils, M. E., et al., eds. *Modern Nutrition in Health and Disease*, 9th ed. Baltimore: Williams and Wilkins, 1999. pp. 413–21.

- Lems, W. F., et al. “[Pharmacological Prevention of Osteoporosis in Patients on Corticosteroid Medication.]” *Nederlands Tijdschrift voor Geneeskunde* 1998, 142(34): 1905–8[in Dutch].
- Liedholm, H., Wahlin-Boll, E., Melander, A. “Mechanisms and Variations in the Food Effect on Propranolol Bioavailability.” *European Journal of Clinical Pharmacology* 1990, 38: 469–75.
- Li, G. “Effect of Methylcobalamin on Diabetic Neuropathies. Beijing Methylcobalamin Clinical Trial Collaborative Group.” *Zhonghua Nei Ke Za Zhi* 1999;38(1): 14–17[in Chinese].
- Koyama, K., et al. “Efficacy of Methylcobalamin on Lowering Total Homocysteine Plasma Concentrations in Haemodialysis Patients Receiving High-Dose Folic Acid Supplementation.” *Nephrology Dialysis Transplantation* 2002, 17(5): 916–22.
- Lin, R., White, J. H. “The Pleiotropic Actions of Vitamin D.” *BioEssays* 2004, 26: 21–8.
- Lilja, J. J., Juntti-Patinen, L., Neuvonen, P. J. “Orange Juice Substantially Reduces the Bioavailability of the Beta-Adrenergic-Blocking Agent Celiprolol.” *Clinical Pharmacology and Therapeutics* 2004, March, 75(3): 184–90.
- Lilja, J. J., Raaska, K., Neuvonen, P. J. “Effects of Orange Juice on the Pharmacokinetics of Atenolol.” *European Journal of Clinical Pharmacology* 2005, July, 61(5–6): 337–40.
- Lockey, S. D., Sr. “Hypersensitivity to Tartrazine (FD&C Yellow 5) and Other Dyes and Additives Present in Foods and Pharmaceutical Products.” *Annals of Allergy, Asthma and Immunology* 1977, March, 38(3): 206–10.
- Lusardi, P., Piazza, E., Fogari, R. “Cardiovascular Effects of Melatonin in Hypertensive Patients Well Controlled by Nifedipine: A 24-Hour Study.” *British Journal of Clinical Pharmacology* 2000, 49(5): 423–27.

- Mahmood, H., et al. "Health Effects of Soda Drinking in Adolescent Girls in the United Arab Emirates." *Journal of Critical Care* 2008, September, 23(3): 434–40.
- Malinow, M. R. "Plasma Homocysteine and Arterial Occlusive Diseases: A Mini-Review." *Clinical Chemistry* 1995, 41: 173–76.
- Manson, J. E., et al. For the Women's Health Initiative and Women's Health Initiative-Coronary Artery Calcium Study Investigators. "Calcium/Vitamin D Supplementation and Coronary Artery Calcification in the Women's Health Initiative." *Menopause* 2010, July, 17(4): 683–91.
- Marchbanks, C. R. "Drug-Drug Interactions with Fluoroquinolones." *Pharmacotherapy* 1993, 13(Pt 2): 23S–28S.
- Martín, V., et al. "Melatonin Sensitizes Human Malignant Glioma Cells against TRAIL-Induced Cell Death." *Cancer Letters* 2010, 287: 216–23.
- Mazokopakis, E. E., et al. "Effects of 12 Months Treatment with L-Selenomethionine on Serum Anti-TPO Levels in Patients with Hashimoto's Thyroiditis." *Thyroid* 2007, July, 17(7): 609–12.
- McDonald's. "Nutrition."
http://mcdonalds.com/us/en/food/food_quality/nutrition_choices.html.
- McFarland, L. V. "Systematic Review and Meta-Analysis of *Saccharomyces boulardii* in Adult Patients." *World Journal of Gastroenterology* 2010, May 14, 16(18): 2202–22.
- McIntyre, I. M., et al. "Alterations to Plasma Melatonin and Cortisol After Evening Alprazolam Administration in Humans." *Chronobiology International* 1993, June, 10(3): 205–13.
- McRae, M. P. "Vitamin C Supplementation Lowers Serum Low-Density Lipoprotein Cholesterol and Triglycerides: A Meta-Analysis of 13 Randomized Controlled Trials." *Journal of Chiropractic Medicine* 2008, 7(2): 48–58.

- Menon, I. S., et al. "Effect of Onions on Blood Fibrinolytic Activity." *British Medical Journal* 1968, 3:351.
- Michaud, D. S., et al. "Meat Intake and Bladder Cancer Risk in 2 Prospective Cohort Studies." *American Journal of Clinical Nutrition* 2006, 84: 1177–83.
- Mills, E., et al. "Melatonin in the Treatment of Cancer: A Systematic Review of Randomized Controlled Trials and Meta-Analysis." *Journal of Pineal Research* 2005, November, 39(4): 360–66.
- Mitka, M., "Vitamin D Deficits May Affect Heart Health." *JAMA* 2008, 299: 753–54.
- Mock, D. M., Dyken, M. E. "Biotin Catabolism Is Accelerated in Adults Receiving Long-Term Therapy with Anticonvulsants." *Neurology* 1997, 49: 1444–47.
- Mock, D. M., et al. "Disturbances in Biotin Metabolism in Children Undergoing Long-Term Anti-convulsant Therapy." *Journal of Pediatric Gastroenterology and Nutrition* 1998, 26: 245–50.
- Morisco, C., Trimarco, B., Condorelli, M. "Effect of Coenzyme Q10 Therapy in Patients with Congestive Heart Failure: A Long-Term Multicenter Randomized Study." *Clinical Investigator* 1993, 71(8 Suppl): S134–36.
- Nau, G., et al. "Antiepileptic Drugs Alter Endogenous Retinoid Concentrations: A Possible Mechanism of Teratogenesis of Anticonvulsant Therapy." *Life Sciences* 1995, May, 57(1): 53–60.
- Neuman, I., et al. "The Danger Of 'Yellow Dyes' (Tartrazine) to Allergic Subjects." *Clinical Allergy*. 1978, January, 8(1): 65–68.
- Newall, C. A., Anderson, L. A., Phillipson, J. D. *Herbal Medicines: A Guide for Health-Care Professionals*. London: Pharmaceutical Press, 1996.
- Newman, L. C., Lipton, R. B. "Migraine MLT-Down: An Unusual Presentation of Migraine in Patients with Aspartame-Triggered Headaches." *Headache* 2001, October, 41(9): 899–901.

- Office of Dietary Supplements, National Institutes of Health. "Dietary Supplement Fact Sheet: Selenium."
- Office of Dietary Supplements, National Institutes of Health. "Dietary Supplement Fact Sheet: Zinc."
- Olatunbosum, D. A., Adeniyi, F. A., Adadevoh, B. K. "Effect of Oral Contraceptives on Serum Magnesium Levels." *International Journal of Fertility* 1974, 19: 224–26.
- Olivares, M., Pizarro, F. "Bioavailability of Iron Bis-Glycinate Chelate in Water." *Archivos Latinoamericanos de Nutrición* 2001, March, 51(1 Suppl 1): 22–25.
- Omenn, G. S., et al. "Effects of a Combination of Beta Carotene and Vitamin A on Lung Cancer and Cardiovascular Disease." *New England Journal of Medicine* 1996, 334: 1150–55.
- Pan, J., et al. "Niacin Treatment of the Atherogenic Lipid Profile and Lp(a) in Diabetes." *Diabetes, Obesity and Metabolism* 2002, 4: 255–61.
- Parham, M., et al. "Effect of Zinc Supplementation on Microalbuminuria in Patients with Type 2 Diabetes: A Double Blind, Randomized, Placebo-Controlled, Cross-Over Trial." *Review of Diabetic Studies* 2008, 5(2): 102–09.
- Partin, J. F., Pushkin, Y. R. "Tachyarrhythmia and Hypomania with Horny Goat Weed." *Psychosomatics* 2004, November–December, 45(6): 536–37.
- PDR for Herbal Medicines*, 2nd edition. Oradell, NJ: Medical Economics Company, 2000.
- Pelton, R., et al. *Drug-Induced Nutrient Depletion Handbook*. Hudson, OH: Lexi-Comp, 2001.
- Prasad, A. S. "Zinc in Human Health: Effect of Zinc on Immune Cells." *Molecular Medicine* 2008, May–June, 14(5–6): 353–57.
- Prinz-Langenohl, R., et al. "[6S]-5-Methyltetrahydrofolate Increases Plasma Folate More Effectively Than Folic Acid in Women with the Homozygous or Wild-Type 677C T

- Polymorphism of Methylene tetrahydrofolate Reductase.” *British Journal of Pharmacology* 2009, December, 158(8): 2014–21.
- Pronsky, Z. *Powers and Moore’s Food Medication Interactions*, 11th edition. Pottstown, PA: Food-Medication Interactions, 1999.
- Holti, G. “An Experimentally Controlled Evaluation of the Effect of Inositol Nicotinate Upon the Digital Blood Flow in Patients with Raynaud’s Phenomenon.” *Journal of International Medical Research* 1979, 473–83.
- Reasner, C. A., et al. “Acute Changes in Calcium Homeostasis During Treatment of Primary Hyperparathyroidism with Risedronate.” *Journal of Clinical Endocrinology and Metabolism* 1993, 77: 1067–71.
- Refsum, H., et al. “Homocysteine and Cardiovascular Disease.” *Annual Review of Medicine* 1998, 49: 31–62.
- Reinken, L. “The Influence of Antiepileptic Drugs on Vitamin B₆ Metabolism.” *Acta Vitaminologica et Enzymologica* 1975, 291: 252–54.
- Rimm, E. B., et al. “Folate and Vitamin B₆ from Diet and Supplements in Relation to Risk of Coronary Heart Disease among Women.” *JAMA* 1998, 279: 359–64.
- Rink, L., Gabriel, P. “Zinc and the Immune System.” *Proceedings of the Nutrition Society* 2000, November, 59(4): 541–52.
- Rivey, M. P., Schottelius, D. D., Berg, M. J. “Phenytoin-Folic Acid: A Review.” *Drug Intelligence and Clinical Pharmacy* 1984, 18(4): 292–301.
- Roe, D. A. “Drug and Nutrient Interactions in the Elderly Diabetic.” *Drug-Nutrient Interactions* 1988, 5(4): 195–203.
- Rojdmark, S., et al. “Inhibition of Melatonin Secretion by Ethanol in Man.” *Metabolism* 1993, 42: 1047–51.
- Rossi, E., et al. “Coenzyme Q10 in Ischaemic Cardiopathy.” In: Folkers, K., et al., eds. *Biomedical and Clinical Aspects of*

- Coenzyme Q* , Volume 6. Amsterdam: Elsevier, 1991. pp. 321–26.
- Rude, R. K. “Magnesium Deficiency: A Cause of Heterogeneous Disease in Humans.” *Journal of Bone and Mineral Research* 1998, 13: 749–58.
- Saris, N. E., et al. “Magnesium: An Update on Physiological, Clinical, and Analytical Aspects.” *Clinica Chimica Acta* 2000, 294: 1–26.
- Scalabrino, G. “Cobalamin (Vitamin B₁₂) in Subacute Combined Degeneration and Beyond: Traditional Interpretations and Novel Theories.” *Experimental Neurology* 2005, April, 192(2): 463–79.
- Scalabrino, G. “The Multi-Faceted Basis of Vitamin B₁₂ (Cobalamin) Neurotrophism in Adult Central Nervous System: Lessons Learned from Its Deficiency.” *Progress in Neurobiology* 2009, July, 88(3): 203–20.
- Scalabrino, G., Veber, D., Mutti, E. “New Pathogenesis of the Cobalamin-Deficient Neuropathy.” *Medicina nei Secoli* 2007, 19(1): 9–18.
- Schardt, F., et al. “Effect of Coenzyme Q10 on Ischaemia-Induced ST-Segment Depression: A Double Blind, Placebo-Controlled Crossover Study.” In: Folkers, K., et al., eds. *Biomedical and Clinical Aspects of Coenzyme Q* , Volume 6. Amsterdam: Elsevier, 1991. pp. 385–403.
- Schneeberger, W., et al. “Clinical Double Blind and Crossover Trial with Coenzyme Q10 on Patients with Cardiac Disease.” In: Folkers, K., et al., eds. *Biomedical and Clinical Aspects of Coenzyme Q* , Volume 5. Amsterdam: Elsevier, 1991. pp. 325–33.
- Schneyer, C. R. “Calcium Carbonate and Reduction of Levothyroxine Efficacy.” *JAMA* 1998, 279: 750.
- Schoenen, J., Jacquy, J., Lenaerts, M. “Effectiveness of High-Dose Riboflavin in Migraine Prophylaxis. A Randomized Controlled Trial.” *Neurology* 1998, 50(2): 466–70.

- Schulze, M. B., et al. "Processed Meat Intake and Incidence of Type 2 Diabetes in Younger and Middle-Aged Women." *Diabetologia* 2003, 46: 1465–73.
- Schwartz, M. L. "Severe Reversible Hyperglycemia as a Consequence of Niacin Therapy." *Archives of Internal Medicine* 1993, September 13, 153(17): 2050–52.
- Seitz, H. K. "Alcohol and Retinoid Metabolism." *Gut* 2000, 47: 748–50.
- Selhub, J., et al. "Vitamin Status and Intake as Primary Determinants of Homocysteinemia in an Elderly Population." *JAMA* 1993, 270: 2693–98.
- Seligmann, H., et al. "Thiamine Deficiency in Patients with Congestive Heart Failure Receiving Long-Term Furosemide Therapy: A Pilot Study." *American Journal of Medicine* 1991, 91: 151–55.
- Shamir, E., et al. "Melatonin Treatment for Tardive Dyskinesia: A Double-Blind, Placebo-Controlled, Crossover Study." *Archives of General Psychiatry* 2001, 58(11): 1049–52.
- Shils, M. E. "Magnesium." In Shils, M.E., et al., eds. *Modern Nutrition in Health and Disease*, 9th edition. Baltimore: Williams and Wilkins, 1999. pp. 169–92.
- Shimizu, T., et al. "Theophylline Attenuates Circulating Vitamin B₆ Levels in Children with Asthma." *Pharmacology* 1994, December, 49(6): 392–97.
- Siegel, I. J. "Israel Bans Import of Sildenafil Citrate after Six Deaths in the US." *British Medical Journal* 1998, May, 316(7145): 1625.
- Sifton, D. W., ed. *Physicians Desk Reference*. Montvale, NJ: Medical Economics Company, 2000. pp. 2953–54; 2504–06.
- Simon, J. A., Hudes, E. S. "Relationship of Ascorbic Acid to Blood Lead Levels." *JAMA* 1999, June 23–30, 281(24): 2289–93.
- Singh, N., Singh, P. N., Hershman, J. M. "Effect of Calcium Carbonate on the Absorption of Levothyroxine." *JAMA*

2000, 283: 2822–25.

- Siri, P. W., Verhoef, P., Kok, F. J. “Vitamins B₆, B₁₂, and Folate: Association with Plasma Total Homocysteine and Risk of Coronary Atherosclerosis.” *Journal of the American College of Nutrition* 1998, 17: 435–41.
- Slade, B. A., et al. “Postlicensure Safety Surveillance for Quadrivalent Human Papillomavirus Recombinant Vaccine.” *JAMA* 2009, August 19, 302(7): 795–96.
- Smith, H. F., et al. “Comparative Anatomy and Phylogenetic Distribution of the Mammalian Cecal Appendix.” *Journal of Evolutionary Biology* 2009, October, 22(10): 1984–99.
- Speroni, E., et al. “Sedative Effects of Crude Extract of *Passiflora incarnata* after Oral Administration.” *Phytotherapy Research* 1996, 10: S92–94.
- Spigset, O. “Reduced Effect of Warfarin Caused by Ubidecarenone.” *Lancet* 1994, 344: 1372–73.
- Sprince, H., et al. “Protection against Acetaldehyde Toxicity in the Rat by L-Cysteine, Thiamin and L-2-Methylthiazolidine-4-Carboxylic Acid.” *Agents and Actions*, 1974, April, 4(2): 125–30.
- Sreeramulu, G., Zhu, Y., Knol, W. “Kombucha Fermentation and Its Antimicrobial Activity.” *Journal of Agricultural and Food Chemistry* 2000, 48(6): 2589–94.
- Stevens, R. G., et al. “Alcohol Consumption and Urinary Concentration of 6-Sulfatoxymelatonin in Healthy Women.” *Epidemiology* 2000, 11: 660–65.
- Stopeck, A. “Links between *Helicobacter pylori* Infection, Cobalamin Deficiency, and Pernicious Anemia.” *Archives of Internal Medicine* 2000, May 8, 160: 1229–30.
- Stracke, H., et al. “Efficacy of Benfotiamine Versus Thiamine on Function and Glycation Products of Peripheral Nerves in Diabetic Rats.” *Experimental and Clinical Endocrinology and Diabetes* 2001, 109: 330–36.
- Stratobrat-Hermelin, B. “The Effects of Magnesium Physiological Supplementation on Hyperactivity in

- Children with Attention Deficit Hyperactivity Disorder (ADHD). Positive Response to Magnesium Oral Loading Test." *Magnesium Research* 1997, 10(2): 149–56.
- Sturniolo, G. C., et al. "Inhibition of Gastric Acid Secretion Reduces Zinc Absorption in Man." *Journal of the American College of Nutrition* 1991, August, 10(4): 372–75.
- Sullivan, D., et al. "Grapefruit Juice and the Response to Warfarin." *American Journal of Health-System Pharmacy* 1998, 55: 1581–83.
- Sunderland, G. T., et al. "A Double-Blind Randomised Placebo Controlled Trial of Hexopal in Primary Raynaud's Disease." *Clinical Rheumatology* 1988, 7: 46–49.
- Sun-Edelstein, C., Mauskop, A. "Foods and Supplements in the Management of Migraine Headaches." *Clinical Journal of Pain* 2009, 25(5): 446–52.
- Swedberg, K., et al. "Coenzyme Q10 as an Adjunctive in Treatment of Congestive Heart Failure." In: *64th Scientific Sessions, American Heart Association*, 1991. Abstract 774–76.
- Szarfarc, S. C., et al. "Relative Effectiveness of Iron Bis-Glycinate Chelate (Ferrochel) and Ferrous Sulfate in the Control of Iron Deficiency in Pregnant Women." *Archivos Latinoamericanos de Nutrición* 2001, March, 51(1 Suppl 1): 42–47.
- Tebbey, P. W., Buttke, T. M. "Molecular Basis for the Immunosuppressive Action of Stearic Acid on T Cells." *Immunology* 1990, July, 70(3): 379–84. Erratum in *Immunology* 1990, October, 71(2): 306.
- Tucker, K. L., et al. "Intake of Cola, but Not of Other Carbonated Soft Drinks, Is Associated with Low BMD in Women." *American Journal of Clinical Nutrition* 2006, October, 84(4): 936–42.
- Ubbink, J. B., et al. "The Effect of a Subnormal Vitamin B-6 Status on Homocysteine Metabolism." *Journal of Clinical Investigation* 1996, 98: 177–84.

- Umesawa, M., et al. "Dietary Intake of Calcium in Relation to Mortality from Cardiovascular Disease." *Stroke* 2006, 37: 20–26.
- Upritchard, J. E., Sutherland, W. H., Mann, J. I. "Effect of Supplementation with Tomato Juice, Vitamin E, and Vitamin C on LDL Oxidation and Products of Inflammatory Activity in Type 2 Diabetes." *Diabetes Care* 2000, 23: 733–38.
- Ursing, C., et al. "Influence of Cigarette Smoking on Melatonin Levels in Man." *European Journal of Clinical Pharmacology* 2005, May, 61(3): 197–201.
- Vantieghem, K., et al. "UVB-Induced 1,25(OH)₂D₃ Production and Vitamin D Activity in Intestinal CaCo-2 Cells and in THP-1 Macrophages Pretreated with a Sterol Δ⁷-Reductase Inhibitor." *Journal of Cellular Biochemistry* 2006, 99(1): 229–40.
- Vogiatzoglou, A., et al. "Vitamin B₁₂ Status and Rate of Brain Volume Loss in Community-Dwelling Elderly." *Neurology* September 9, 2008, 71(11): 826–32.
- Walters, M. T., et al. "A Double-Blind, Cross-Over, Study of Oral N-Acetylcysteine In Sjogren's Syndrome." *Scandinavian Journal of Rheumatology Supplement* 1986, 61: 253–58.
- Wang, M., et al. "Polymorphisms of Methylenetetrahydrofolate Reductase and Methionine Synthase Genes and Bladder Cancer Risk: A Case-Control Study with Meta-Analysis." *Clinical and Experimental Medicine* 2009, 9: 9–19.
- Weaver, C. M., et al. "Human Calcium Absorption from Whole-Wheat Products." *Journal of Nutrition* 1991, November, 121(11): 1769–75.
- Welihinda, J., et al. "Effect of *Momordica charantia* on the Glucose Tolerance in Maturity Onset Diabetes." *Journal of Ethnopharmacology* 1986, 17: 277–82.
- Wells, P. S., et al. "Interactions of Warfarin with Drugs and Food." *Annals of Internal Medicine* 1994, 121: 676–83.

- Werbach, M. R. *Foundations of Nutritional Medicine*. Tarzana, CA: Third Line Press, 1997. pp. 210–11.
- Wester, P. “Magnesium.” *American Journal of Clinical Nutrition* 1987, 45: 1305–10.
- Whitcomb, D. C., Block, G. D. “Association of Acetaminophen Hepatotoxicity with Fasting and Ethanol Use.” *JAMA* 1994, December 21, 272(23): 1845–50.
- Widmer, P., et al. “Diuretic-Related Hypokalaemia—The Role of Diuretics, Potassium Supplements, Glucocorticoids, and Beta-2-Adrenoceptor Agonists. Results from the Comprehensive Hospital Drug Monitoring Program, Berne (CHDM).” *European Journal of Clinical Pharmacology* 1995, 49(1–2): 31–36.
- Willems, F. F., et al. “Pharmacokinetic Study on the Utilisation of 5-Methyltetrahydrofolate and Folic Acid in Patients with Coronary Artery Disease.” *British Journal of Pharmacology* 2004, March, 145 (5): 825–30.
- Witte, K. K., Clark, A. L., Cleland, J. G. “Chronic Heart Failure and Micronutrients.” *Journal of the American College of Cardiology* 2001, 37: 1765–74.
- Wynn, V. “Vitamins and Oral Contraceptive Use.” *Lancet* 1975, 305(7906): 561–64.
- Yamatsu, K., et al. “Pharmacological Studies on Degeneration and Regeneration of Peripheral Nerves. (1) Effects of Methylcobalamin and Cobamide on EMG Patterns and Loss of Muscle Weight in Rats with Crushed Sciatic Nerve.” *Nippon Yakurigaku Zasshi* 1976, 72(2): 259–68.
- Yamatsu, K., et al. “Pharmacological Studies on Degeneration and Regeneration of the Peripheral Nerves. (2)” *Nippon Yakurigaku Zasshi* 1976, 72(2): 269–78.
- Yin, J., et al. “Melatonin Arrests Peroxynitrite-Induced Tau Hyperphosphorylation and the Over-activation of Protein Kinases in Rat Brain.” *Journal of Pineal Research* 2006, September, 41(2): 124–29.
- Zenuk, C., et al. “Thiamine Deficiency in Congestive Heart Failure Patients Receiving Long Term Furosemide

Therapy.” *Canadian Journal of Clinical Pharmacology* 2003, 10: 184–88.

Zhang, S. M., et al. “Plasma Folate, Vitamin B₆, Vitamin B₁₂, Homocysteine, and Risk of Breast Cancer.” *Journal of the National Cancer Institute* 2003, 95(5): 373–80.

Zheng, S., Yumei, F., Chen, A. “De Novo Synthesis of Glutathione Is a Prerequisite for Curcumin to Inhibit Hepatic Stellate Cell (HSC) Activation.” *Free Radical Biology and Medicine* 2007, 43(3): 444–53.

Zhu, B. T. “Medical Hypothesis: Hyperhomocysteinemia Is a Risk Factor for Estrogen-Induced Hormonal Cancer.” *International Journal of Oncology* 2003, March, 22(3): 499–508.

www.jama.ama-assn.org/cgi/content/full/301/1/39

www.ncbi.nlm.nih.gov/pubmed/15896807

www.ncbi.nlm.nih.gov/pubmed/8021696

www.ncbi.nlm.nih.gov/pmc/articles/PMC2631578

About the Author

Suzy Cohen, RPh, is a best-selling author, syndicated columnist, and speaker. She has been a licensed pharmacist for more than 22 years and has experience in hospital, retail, and consultant pharmacy practice. She understands the value of medication, but she prides herself on thinking “outside the pill.” Suzy has been a guest on *The View* and *The Dr. Oz Show*. She is a member of the American College for Advancement in Medicine, the Institute for Functional Medicine, the American Academy of Anti-Aging Medicine, and the American Pharmacists Association.

Her groundbreaking book on diabetes, *Diabetes without Drugs*, was selected for reading by the American Academy of Anti-Aging Medicine for doctors seeking board certification in Anti-Aging and Regenerative Medicine.

You can follow Suzy on Twitter and Facebook. You can also sign up to receive Suzy’s free health newsletter, submit your own health questions, or read hundreds of her archived articles at her Web site, www.DearPharmacist.com.

Also by the Author

The 24-Hour Pharmacist (Rodale 2008)

Diabetes without Drugs (Rodale 2010)

Identify Your Drug Category

In this list, you'll find hundreds of generic and brand-name drug names listed alphabetically. Locate the drug's name and you'll find its corresponding drug category, then refer to the Index on page [358](#) to find page references for that particular drug category.

A

Accupril. *See* ACE inhibitors; Blood pressure drugs

Acebutolol. *See* Beta-blockers; Blood pressure drugs

Acetaminophen and codeine. *See* Analgesics

Acetaminophen and hydrocodone. *See* Analgesics

Acetaminophen and oxycodone. *See* Analgesics

Acetaminophen and paracetamol. *See* Analgesics

Acetaminophen and propoxyphene. *See* Analgesics

Acetazolamide. *See* Glaucoma drugs

Acetohexamide. *See* Diabetes medications

Aciphex. *See* Acid blockers

Activella. *See* Hormone replacement therapy/oral contraceptives

Actonel. *See* Bisphosphonate bone-building drugs

Actos. *See* Diabetes medications

Adalat. *See* Blood pressure drugs; Calcium channel blockers

Adriamycin. *See* Cancer drugs

Advair. *See* Corticosteroids, inhaled

Advair Diskus. *See* Long-acting beta agonists (LABAs)

Advicor. *See* Cholesterol medicines; Statins

Advil. *See* Analgesics; Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Aggrenox. *See* Analgesics; Salicylates

Albuterol. *See* Bronchodilators Albuterol and ipratropium.
See Bronchodilators

Aldactone. *See* Blood pressure drugs; Diuretics, potassium-sparing

Aldomet. *See* Blood pressure drugs

Alendronate. *See* Bisphosphonate bone-building drugs

Aleve. *See* Analgesics; Anti-inflammatory drugs;
Nonsteroidal anti-inflammatory drugs (NSAIDs)

Alka-Seltzer. *See* Antacids

Alli. *See* Lipase inhibitors

Alor. *See* Analgesics

Alor 5/500. *See* Analgesics

Alprazolam. *See* Antianxiety medications

Altace. *See* ACE inhibitors; Blood pressure drugs

AlternaGEL. *See* Antacids

Altacor. *See* Cholesterol medicines; Statins

Altoprev. *See* Cholesterol medicines; Statins

Aluminum carbonate gel. *See* Antacids

Aluminum hydroxide. *See* Antacids

Amaryl. *See* Diabetes medications

Ambien. *See* Sleep medications

Amiloride. *See* Blood pressure drugs; Diuretics, potassium-sparing

Amitriptyline. *See* Antidepressants, tricyclic

Amlodipine. *See* Blood pressure drugs; Calcium channel blockers

Amobarbital. *See* Barbiturates

Amoxapine. *See* Antidepressants, tricyclic

Amoxicillin. *See* Antibiotics

Amoxil. *See* Antibiotics

Amphojel. *See* Antacids

Amytal. *See* Barbiturates

Anafranil. *See* Antidepressants, tricyclic

Anaprox. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Anastrozole. *See* Nonsteroidal aromatase inhibitors for breast cancer

Apresoline. *See* Blood pressure drugs

Aricin. *See* Corticosteroids

Arimidex. *See* Nonsteroidal aromatase inhibitors for breast cancer

Aristocort cream. *See* Corticosteroids

Armour thyroid. *See* Thyroid medicine

Asendin. *See* Antidepressants, tricyclic

Aspirin. *See* Analgesics; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Aspirin and caffeine. *See* Salicylates

Aspirin and carisoprodol. *See* Analgesics

Aspirin and dipyridamole. *See* Analgesics; Salicylates

Aspirin and hydrocodone. *See* Analgesics

Aspirin and methocarbamol. *See* Analgesics; Anti-inflammatory drugs

Aspirin and oxycodone. *See* Analgesics; Salicylates

Aspirin and salicylic acid. *See* Salicylates

Atacand HCT. *See* Angiotensin II receptor antagonists; Blood pressure drugs; Diuretics, thiazide

Atarax. *See* Antihistamines

Atenolol. *See* Beta-blockers; Blood pressure drugs

Atenolol and chlorthalidone. *See* Blood pressure drugs; Diuretics, thiazide

Ativan. *See* Antianxiety medications

Atorvastatin. *See* Cholesterol medicines; Statins

Atromid-S. *See* Cholesterol medicines

Augmentin. *See* Antibiotics

Avalide. *See* Angiotensin II receptor antagonists; Blood pressure drugs

Avandia. *See* Diabetes medications

Avapro HCT. *See* Diuretic, sulfonamide

Avelox. *See* Antibiotics

Axid. *See* Acid blockers

Aygestin. *See* Hormone replacement therapy/oral contraceptives

Azithromycin. *See* Antibiotics

Azmacort inhaler. *See* Corticosteroids, inhaled

AZT. *See* Antivirals

Azulfidine. *See* Anti-inflammatory drugs

B

Bactrim. *See* Antibiotics

Baking soda. *See* Antacids

Basaljel. *See* Antacids

Bayer. *See* Analgesics; Nonsteroidal anti-inflammatory drugs (NSAIDs); Salicylates

Benazepril. *See* ACE inhibitors; Blood pressure drugs

Benemid. *See* Antigout

Bepridil. *See* Blood pressure drugs; Calcium channel blockers

Betamethasone. *See* Corticosteroids

Betapace. *See* Antiarrhythmics

Betapace. *See* Blood pressure drugs
Betaxolol. *See* Beta-blockers; Blood pressure drugs
Biaxin. *See* Antibiotics
Bisacodyl. *See* Laxatives
Bisoprolol. *See* Beta-blockers; Blood pressure drugs
Budesonide. *See* Corticosteroids, inhaled
Bufferin. *See* Analgesics; Nonsteroidal anti-inflammatory drugs (NSAIDs); Salicylates
Bumetanide. *See* Blood pressure drugs; Diuretics, loop
Bumex. *See* Blood pressure drugs; Diuretics, loop
Butalbital. *See* Barbiturates
Butalbital-containing drugs. *See* Analgesics; Barbiturates

C

Caffeine and aspirin. *See* Salicylates
Calan. *See* Blood pressure drugs; Calcium channel blockers
Calcium carbonate. *See* Antacids
Candesartan and HCTZ. *See* Angiotensin II receptor antagonists; Blood pressure drugs; Diuretics, thiazide
Capoten. *See* ACE inhibitors
Captopril. *See* Ace inhibitors; Blood pressure drugs
Carbamazepine. *See* Anticonvulsants
Carbatrol. *See* Anticonvulsants
Carbidopa and levodopa. *See* Parkinson's drugs
Cardicor. *See* Beta-blockers; Blood pressure drugs
Cardizem. *See* Blood pressure drugs; Calcium channel blockers
Carisoprodol. *See* Muscle relaxants
Carisoprodol and aspirin. *See* Analgesics

Carvedilol. *See* Beta-blockers; Blood pressure drugs

Casanthranol and docusate. *See* Stool-softeners; Laxatives

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Ceclor. *See* Antibiotics

Cefaclor. *See* Antibiotics

Cefdinir. *See* Antibiotics

Celebrex. *See* Anti-inflammatory drugs

Celecoxib. *See* Anti-inflammatory drugs

Celontin. *See* Anticonvulsants

Cephalexin. *See* Antibiotics

Chlorothiazide. *See* Blood pressure drugs; Diuretics, thiazide

Chlorpromazine. *See* Antipsychotics; Psychiatric drugs

Chlorpropamide. *See* Diabetes medications

Chlorthalidone. *See* Blood pressure drugs; Diuretics, thiazide

Chlorthalidone and atenolol. *See* Blood pressure drugs; Diuretics, thiazide

Cholestyramine resin. *See* Cholesterol medicines

Cimetidine. *See* Acid blockers

Cipro. *See* Antibiotics

Ciprofloxacin. *See* Antibiotics

Clarithromycin. *See* Antibiotics

Climara. *See* Hormone replacement therapy/oral contraceptives

Clinoril. *See* Anti-inflammatory drugs

Clofibrate. *See* Cholesterol medicines

Clomipramine. *See* Antidepressants, tricyclic; Psychiatric drugs

Clonazepam. *See* Antianxiety medications

Clonidine. *See* Blood pressure drugs; Centrally acting alpha-agonist hypotensive agents

Codeine and acetaminophen. *See* Analgesics

Col-Benemid. *See* Antigout

Colchicine. *See* Antigout agents

Colcrys. *See* Antigout agents

Colesevelam. *See* Cholesterol medicines

Colestid. *See* Cholesterol medicines

Colestipol. *See* Cholesterol medicines

CombiPatch. *See* Hormone replacement therapy/oral contraceptives

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Combivir. *See* Antivirals

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Corgard. *See* Beta-blockers; Blood pressure drugs

Cortef. *See* Corticosteroids

Cortisone. *See* Corticosteroids

Cortone Acetate. *See* Corticosteroids

Coumadin. *See* Blood thinner

Crestor. *See* Cholesterol medicines; Statins

Cuprimine. *See* Chelating agents

Cycloserine. *See* Bronchodilators

Cyclosporine. *See* Immunosuppressants

D

Darvocet. *See* Analgesics

Decadron. *See* Corticosteroids

Delavirdine. *See* Antivirals

Deltasone. *See* Corticosteroids

Demadex. *See* Blood pressure drugs; Diuretics, loop

Depakene. *See* Anticonvulsants

Depakote. *See* Anticonvulsants

Depo-Testadiol. *See* Hormone replacement therapy/oral contraceptives

DES. *See* Hormone replacement therapy/oral contraceptives

Desyrel. *See* Antidepressants

Dexamethasone. *See* Corticosteroids

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Diabinese. *See* Diabetes medications

Diamox. *See* Glaucoma drugs

Diazepam. *See* Antianxiety medications

Diclofenac. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Dicloxacillin. *See* Antibiotics

Didronel. *See* Bisphosphonate bone-building drugs

Diethylstilbestrol. *See* Hormone replacement therapy/oral contraceptives

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Digoxin. *See* Cardiac glycosides

Dilantin. *See* Anticonvulsants

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Diovan HCT. *See* Angiotensin II receptor blockers; Blood pressure drugs

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Docusate and casanthranol. *See* Stool-softeners; Laxatives
Donnatal. *See* Barbiturates
Doryx. *See* Antibiotics
Doxepin. *See* Antidepressants, tricyclic
Doxorubicin. *See* Cancer drugs
Doxycycline. *See* Antibiotics
Droperidol. *See* Psychiatric drugs
Dulcolax. *See* Laxatives
Dyazide. *See* Blood pressure drugs; Diuretic, sulfonamide;
Diuretics, potassium-sparing
Dymelor. *See* Diabetes medications
Dynapen. *See* Antibiotics
Dyrenium. *See* Blood pressure drugs; Diuretics, potassium-
sparing

E

Ecotrin. *See* Analgesics; Salicylates
Edecrin. *See* Blood pressure drugs; Diuretics, loop
E.E.S. *See* Antibiotics
Elavil. *See* Antidepressants, tricyclic
Elocon. *See* Corticosteroids
Enalapril and HCTZ. *See* ACE inhibitors; Blood pressure
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Endocet. *See* Analgesics
Enduron. *See* Blood pressure drugs; Diuretics, thiazide
Epivir. *See* Antivirals
Erythromycin. *See* Antibiotics
Esomeprazole. *See* Acid blockers

Estrace. *See* Hormone replacement therapy/oral contraceptives

Estraderm. *See* Hormone replacement therapy/oral contraceptives

Estradiol. *See* Hormone replacement therapy/oral contraceptives

Estratab. *See* Hormone replacement therapy/oral contraceptives

Estratest. *See* Hormone replacement therapy/oral contraceptives

Estring. *See* Hormone replacement therapy/oral contraceptives

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Estrogens. *See* Hormone replacement therapy/oral contraceptives

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Evista. *See* Osteoporosis drugs; SERMs (Selective Estrogen Receptor Modulators—used for breast cancer)

Ezetimibe. *See* Cholesterol medicines

Ezetimibe and simvastatin. *See* Cholesterol medicines; Statins

F

Famotidine. *See* Acid blockers

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Feldene. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Felodipine. *See* Blood pressure drugs; Calcium channel blockers

Femring. *See* Hormone replacement therapy/oral contraceptives

Fenofibrate. *See* Cholesterol medicines; Fibrates

Feoris. *See* Antifungals

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Fiorinal. *See* Analgesics; Barbiturates; Salicylates

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Flunisolide. *See* Corticosteroids, inhaled

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Fluoxetine. *See* Antidepressants; Selective serotonin reuptake inhibitors (SSRIs)

Fluphenazine. *See* Antipsychotics; Psychiatric drugs

Fluticasone. *See* Corticosteroids, inhaled

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Fluoxetine. *See* Selective serotonin reuptake inhibitors (SSRIs)

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G

Gabapentin. *See* Anticonvulsants

Gabarone. *See* Anticonvulsants

Gemfibrozil. *See* Cholesterol medicines; Fibrates

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Glumetza. *See* Diabetes medications

Glyburide. *See* Diabetes medications

Glyburide and metformin. *See* Diabetes medications

Glynase. *See* Diabetes medications

H

Halcion. *See* Antianxiety medications

Haldol. *See* Antipsychotics; Psychiatric drugs

Halobetasol. *See* Corticosteroids

Haloperidol. *See* Antipsychotics; Psychiatric drugs

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Hydrochlorothiazide. *See* Blood pressure drugs; Diuretic, sulfonamide; Diuretics, thiazide
Hydrocodone. *See* Analgesics
Hydrocodone and acetaminophen. *See* Analgesics
Hydrocodone and aspirin. *See* Analgesics
Hydrocortisone. *See* Corticosteroids
Hydrodiuril. *See* Blood pressure drugs; Diuretics, thiazide
Hydroxyzine. *See* Antihistamines
Hygroton. *See* Blood pressure drugs; Diuretics, thiazide
Hyzaar. *See* Blood pressure drugs; Diuretic, sulfonamide

I

Ibuprofen. *See* Analgesics; Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)
Imipramine. *See* Antidepressants, tricyclic
Inapsine. *See* Psychiatric drugs
Indapamide. *See* Blood pressure drugs; Diuretic, sulfonamide
Inderal. *See* Beta-blockers; Blood pressure drugs
Inderal timolol. *See* Beta-blockers
Indocin. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)
Indomethacin. *See* Anti-inflammatory drugs
INH. *See* Antibiotics; Antituberculosis agents
Intelence. *See* Antivirals
Ipratropium and albuterol. *See* Bronchodilators
Irbesartan and HCTZ. *See* Angiotensin II receptor antagonists; Blood pressure drugs; Diuretics, thiazide
Isoniazid. *See* Antibiotics; Antituberculosis agents

Isoptin. *See* Blood pressure drugs; Calcium channel blockers

J

Janumet. *See* Diabetes medications

K

Keflex. *See* Antibiotics

Kerlone. *See* Beta-blockers; Blood pressure drugs

Ketoconazole. *See* Antifungals

Ketoprofen. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Klonopin. *See* Antianxiety medications

L

Labetalol. *See* Blood pressure drugs; Alpha blockers; Beta blockers

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Lamivudine and zidovudine. *See* Antivirals

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Lanoxin. *See* Cardiac glycosides

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L-dopa. *See* Parkinson's drugs

Lescol. *See* Cholesterol medicines; Statins

Levaquin. *See* Antibiotics

Levodopa. *See* Parkinson's drugs

Levodopa and carbidopa. *See* Parkinson's drugs

Levofloxacin. *See* Antibiotics

Levonorgestrel. *See* Hormone replacement therapy/oral contraceptives

Levothyroxine. *See* Thyroid medications

Levoxyl. *See* Thyroid medications

Lidex. *See* Corticosteroids

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Lipostat. *See* Cholesterol medicines; Statins

Liquid Pred. *See* Corticosteroids

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Livalo. *See* Cholesterol medicines; Statins

Lodine. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Lomefloxacin. *See* Antibiotics

Lopid. *See* Cholesterol medicines; Fibrates

Lopressor. *See* Beta-blockers; Blood pressure drugs

Lorazepam. *See* Antianxiety medications

Lorcet. *See* Analgesics

Lortab. *See* Analgesics; Salicylates

Lortab ASA. *See* Analgesics

Losartan and HCTZ. *See* Blood pressure drugs; Diuretics, thiazide

Lotensin. *See* ACE inhibitors; Blood pressure drugs

Lovastatin. *See* Cholesterol medicines; Statins

Lozol. *See* Blood pressure drugs; Diuretic, sulfonamide

Luminal. *See* Barbiturates

Lunesta. *See* Sleep medications

Luvox. *See* Selective serotonin reuptake inhibitors (SSRIs)

Luxiq. *See* Corticosteroids

M

Maalox. *See* Antacids

Magnesium citrate. *See* Laxatives

Magnesium hydroxide. *See* Antacids

Magnesium salicylate. *See* Analgesics; Salicylates

Mavik. *See* ACE inhibitors; Blood pressure drugs

Maxaquin. *See* Antibiotics

Maxzide. *See* Blood pressure drugs; Diuretic, sulfonamide;
Diuretics, potassium-sparing

Medrol. *See* Corticosteroids

Mellaril. *See* Antipsychotics; Psychiatric drugs

Menest. *See* Hormone replacement therapy/oral
contraceptives

Menostar. *See* Hormone replacement therapy/oral
contraceptives

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Metformin and glyburide. *See* Diabetes medications

Metformin and sitagliptin. *See* Diabetes medications

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inflammatory drugs; Salicylates

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Methoxamine. *See* Adrenergic receptor agonists; Blood
pressure drugs

Methsuximide. *See* Anticonvulsants

Methyclothiazide. *See* Blood pressure drugs; Diuretics,
thiazide

Methyldopa. *See* Blood pressure drugs

Methylphenidate. *See* Central nervous system (CNS)
stimulants

Methylprednisolone. *See* Corticosteroids

Metolazone. *See* Blood pressure drugs; Diuretics, thiazide

Metoprolol. *See* Beta-blockers; Blood pressure drugs

Mevacor. *See* Cholesterol medicines; Statins

Micardis HCT. *See* Angiotensin II receptor antagonists; Blood pressure drugs; Diuretic, sulfonamide

Micronase. *See* Diabetes medications

Midamor. *See* Blood pressure drugs; Diuretics, potassium-sparing

Milk of Magnesia. *See* Laxatives

Minocin. *See* Antibiotics

Minocycline. *See* Antibiotics

Mobidin. *See* Analgesic; Salicylates

Moexipril. *See* ACE inhibitors; Blood pressure drugs

Moexipril and HCTZ. *See* Diuretic, sulfonamide

Mometasone. *See* Corticosteroids

Monopril. *See* ACE inhibitors; Blood pressure drugs

Motrin. *See* Analgesics; Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Moxifloxacin. *See* Antibiotics

Myambutol. *See* Antituberculosis agents

Mylanta. *See* Antacids

Mysoline. *See* Anticonvulsants

N

Nabumetone. *See* Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Nadolol. *See* Beta-blockers; Blood pressure drugs

Naprosyn. *See* Analgesics; Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Naproxen. *See* Analgesics; Anti-inflammatory drugs; Nonsteroidal anti-inflammatory drugs (NSAIDs)

Nardil. *See* MAO inhibitors Nasacort. *See* Corticosteroids, inhaled

Nasalide. *See* Corticosteroids, inhaled

Nasarel. *See* Corticosteroids, inhaled

Nembutal. *See* Barbiturates Neomycin. *See* Antibiotics

Neoral. *See* Immunosuppressants

Neurontin. *See* Anticonvulsants

Nevirapine. *See* Antivirals

Nexium. *See* Acid blockers

Niacin and simvastatin. *See* Cholesterol medicines; Statins

Nifedipine. *See* Blood pressure drugs; Calcium channel blockers

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Unpleasant, Uncomfortable, and Unexplained Side Effects?

Drug Muggers Is Your Side-Effect Solution

Prescription and over-the-counter drugs help millions of people with devastating diseases and chronic conditions. But in the process, these medications can also deplete the body's natural stores of vitamins, minerals, and hormones—the very nutrients you need to keep energy levels high, fend off infections, and be healthy. Pharmacist Suzy Cohen calls these medications “drug muggers,” and she says it's essential to replenish what a drug mugger steals from your body in order to feel your best and avoid side effects. Not understanding the drug-mugging effect may lead to new “diseases” and possibly catastrophic health consequences. *Drug Muggers* helps you understand how drugs impact your daily life. It reveals why you may be feeling so poor and how to enhance your well-being with affordable nutrients that are sold over the counter. You can (and will) improve the way you feel—whether or not you take medicine!

You'll discover:

- How to relieve uncomfortable or potentially serious side effects
- How to remain compliant with your medication and still feel well
- Which foods and drinks to avoid if you take certain medications
- How to install a nutrient security system with vitamins, minerals, and food choices
- Which vitamins outperform medications in some cases
- Ways to increase your energy levels and your sense of well-being
- How to improve digestion and relieve constipation with a simple nutrient
- Why hair and nails grow faster when you replenish nutrients



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Suzy Cohen, RPh, has been a licensed pharmacist for more than 22 years and writes the syndicated health column “Dear Pharmacist.” As America’s Most Trusted Pharmacist®, she has been featured on *The View* and *The Dr. Oz Show*, and she hosts a medical minute on the syndicated TV health show *Know the Cause*. Suzy is a member of the Institute of Functional Medicine, American College for Advancement in Medicine, and the American Association of Anti-Aging Medicine.

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