

**NUTRITIONAL SUPPLEMENT
INFORMATION CONTAINED ON
UC BERKELEY WELLNESS LETTER
WEBSITE AS OF MARCH, 2001***

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Wellness Guide to Dietary Supplements

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5-HTP and Tryptophan

Claims, Benefits: Treats or prevents insomnia, depression, and other problems; modifies mood.

Bottom Line: In 1989, thousands of people taking tryptophan developed a rare and incurable blood disease, leading the FDA to ban all sales of the pills. 5-HTP, a close relative of tryptophan, is being taken as a substitute for it. Its potential dangers outweigh any possible benefits.

Full Article, Wellness Letter, July 1999:

Do-it-yourself brain foods (and supplements)

You may not know much about brain chemistry, but you've probably heard of serotonin, a once-obscure neurotransmitter (brain chemical) that has been much in the news in recent years. Depression, obesity, pain, aggression, insomnia, irritability, addictions, PMS, food cravings, panic disorder, and headaches are some of the problems now linked—with varying degrees of scientific certainty—to abnormalities in serotonin or other chemicals in the brain. Research into this vast subject has yielded drugs such as antidepressants (notably Prozac) and diet drugs (such as Redux, now banned because it caused heart damage).

At the same time, there's a growing array of do-it-yourself attempts to enhance brain chemicals, dubbed nutritional neuroscience. This includes a variety of dietary strategies, along with several supplements (such as tryptophan, also banned, and its new replacement, 5-HTP). *How much can you safely and reliably manipulate your brain chemicals without drugs?*

Dietary supplements: from tryptophan . . .

Neurotransmitters play a complex role in the brain and nervous system. Why not simply take neurotransmitters in pill form? Because they wouldn't get through the blood-brain barrier, which selectively lets into the brain—and keeps out—substances in the blood. But the brain makes its supplies of neurotransmitters mostly from amino acids, the building blocks of protein, and these do enter the brain from the bloodstream. The proteins in foods we eat are broken down into amino acids in the digestive tract; most of these are used elsewhere in the body, but some enter the brain. For example, the amino acid tryptophan is converted into that important neurotransmitter serotonin.

Thus, for years people took tryptophan pills to treat insomnia and as a mood modifier, with some success. Then in 1989 an outbreak of a rare and incurable blood disease among thousands of people taking tryptophan led the FDA to ban all sales of the pills. At least 38 people died, and most of the other victims have remained crippled with painful nerve damage, severe joint pain, and scarring of internal organs. The epidemic was traced to a bad batch of tryptophan from one Japanese maker, which apparently introduced an impurity when it altered its manufacturing process.

Just because tryptophan is a constituent of the proteins in our food, that doesn't mean it's safe in isolation and in large doses. Tryptophan pills may pose health risks, besides the risk of contamination, even in its pure form. For instance, a large intake of any single amino acid may create an imbalance and interfere with the absorption or utilization of other amino acids.

. . . to 5-HTP

Now 5-HTP (5-hydroxytryptophan) supplements are very popular in health-food stores. As the name suggests, this is a close relative of tryptophan. The body makes 5-HTP from tryptophan; and like tryptophan, 5-HTP is converted to serotonin in the brain. The supplement is derived from the seeds of an African tree. For decades European doctors have been prescribing it to treat depression and insomnia (it is also being used for a wide variety of other ailments). Some small studies suggest that 5-HTP may be as effective as standard antidepressants, without the side effects, but most of these studies were not well designed. It is also being marketed for weight loss.

There is still the worry of contamination with 5-HTP, even though its manufacture is very different from that of tryptophan. There have been a few reports, still unconfirmed, of symptoms similar to those caused by the contaminated tryptophan. And indeed researchers have identified one contaminant in 5-HTP.

In addition, 5-HTP should not be combined with other antidepressants, whether prescription or "herbal" (such as St. John's wort).

What about food?

Some researchers believe that a good way to improve serotonin levels—and thus promote relaxation and sleepiness, as well as control food cravings, PMS, and other serotonin-associated problems—is to eat high-carbohydrate foods. This may seem odd, since tryptophan (the serotonin-producing amino acid) is found in protein-rich foods, not in carbohydrate-rich foods. But high-protein foods won't boost serotonin, since these foods are also rich in other amino acids, which compete with tryptophan to get into the brain. (Imagine tryptophan waiting in line with the other amino acids to cross a bridge into the brain.) But a high-carbohydrate meal causes insulin to be released, which lowers blood levels of all amino acids *except* tryptophan. Thus the carbohydrates increase tryptophan's chances of getting into the brain, where it can boost serotonin production.

There are several problems with this food-as-medicine approach. There's no solid research showing that a high-carbo meal will affect brain function, at least not

significantly in healthy people with normal diets. And even proponents of the carbohydrate theory say that to get a substantial effect on serotonin, you have to eat a meal that's nearly 100% carbohydrates on an empty stomach (no food for several hours before). And not any high-carbohydrate foods will do: starchy ones like a plain baked potato or pasta (with no butter or other fat or protein) do work, but fruit doesn't, because its fructose causes insulin to be released too slowly to boost the amount of tryptophan getting into the brain.

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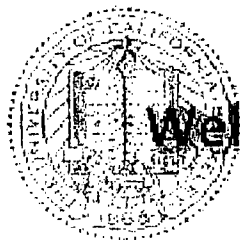
Final words: Nutritional neuroscience is only in its infancy. Thus far things remain murky, and there are few, if any, practical applications. Neurotransmitters are affected by many factors besides what foods we eat and what pills we take. Certain nutrients in foods may indeed affect mood, but the results are unpredictable and undoubtedly small. Certain supplements, such as 5-HTP, do seem to influence brain chemicals. But remember, even though they may be "natural" (which is debatable), they can also have serious adverse effects—just like traditional antidepressants, as well as tryptophan or Redux. *As for 5-HTP, the potential dangers outweigh any possible benefits.*

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Wellness Guide to Dietary Supplements

Aloe Vera Drink

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Claims, Benefits: Cure-all; boosts immunity, cures colds, ulcers, etc.

Bottom Line: There's no scientific evidence it can cure or treat anything.

Full Article, Wellness Letter, April 1998:

Ask the Experts

Q: Is aloe vera drink a good remedy for hernia pain—or anything else? I found 44,000 entries for it on the Internet, mostly from companies selling it as a miracle cure.

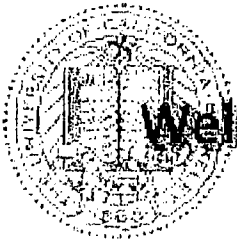
A: Aloe vera, from the leaf of the aloe plant, has long been used in lotions and cosmetics and as a treatment for burns and wounds. The gel that oozes from the aloe leaf may indeed have soothing properties when applied to the skin. But we don't advise drinking aloe juice. There's no scientific evidence that swallowing it cures or treats anything.

Two products come from the aloe plant: the gel from the leaf, which is thin and clear, and aloe latex, or aloes, which comes from evaporating the yellow juice of the leaves. The latter substance, with aloin as its active ingredient, was once used as a purgative, but has been replaced by less toxic laxatives. It can cause severe cramping, diarrhea, and bleeding. Some of its constituents may be carcinogenic. The trouble with swallowing aloe vera juice is that it could be contaminated with aloe latex and thus act as a laxative.

Aloe vera drink has been touted for everything—from boosting immunity to curing colds and ulcers. As your Internet search revealed, there's money to be made in selling it and no restrictions on the claims. If you want to keep an aloe plant on the windowsill and apply the juice to burns, that's the only sensible way to use aloe. At least it can't hurt, unless you happen to be allergic to it, as a few people are.

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Alpha-Lipoic Acid

Claims, Benefits: Prevents or treats many age-related diseases, from heart disease and stroke to diabetes and cataracts.

Bottom Line: This potent and versatile antioxidant may some day be seen as a very important supplement. But for now, not enough is known to recommend it. If you have diabetes or heart disease and decide to take it, tell your doctor.

Full Article, Wellness Letter, September 1999:

A special antioxidant, but . . .

Alpha-lipoic acid is a hot new supplement. Scientists first discovered the importance of this substance in the 1950s, and recognized it as an antioxidant in 1988, but only recently has it made its way into American health-food stores. Very potent and versatile, alpha-lipoic acid is apparently a special antioxidant. It has been the subject of a tremendous amount of basic research around the world, some being done at UC Berkeley by Dr. Lester Packer, a leading expert on antioxidants.

The body needs alpha-lipoic acid to produce energy. The body actually makes enough alpha-lipoic acid for these basic metabolic functions. This compound acts as an antioxidant, however, only when there is an excess of it and it is in the "free" state in the cells. But there is no free alpha-lipoic acid circulating in your body, *unless* you consume supplements or get it injected. Except for yeast and liver, foods contain only tiny amounts of it. What makes alpha-lipoic acid so special as an antioxidant is that it helps deactivate a wide array of fat- and water-soluble free radicals in many bodily systems. In particular, it may help protect the genetic material, DNA. It is also important because it works closely with vitamins C and E and some other antioxidants, "recycling" them and thus making them much more effective.

Alpha-lipoic acid is being studied—and already marketed—as a preventive and/or treatment for many age-related diseases, from heart disease and stroke to diabetes and cataracts. In Germany, in particular, it is often prescribed to treat long-term complications of diabetes, such as nerve damage, thought to result in part from free-radical damage. Some studies—mostly in animals, a few in humans, often using intravenous doses—do show that supplemental alpha-lipoic acid can help keep nerves healthy and play other beneficial roles in the body.

Why it is too soon to act

The research on alpha-lipoic acid is still in its infancy. The studies have been small, and the results sometimes inconsistent. There has been little good research in humans. Large, long-term, well-controlled studies need to be done. No one knows what dose should be used for what ailment. Studies in humans have used much larger doses than are found in most supplements. Though alpha-lipoic acid so far appears to be safe (except for a few reports of allergic skin reactions), no one knows what the long-term side effects of large supplemental doses may be. If alpha-lipoic acid is as powerful as it seems, there may be a danger in too much of a good thing. In addition, while in Germany it is sold only by prescription and (like other supplements) is monitored by the government, in the U.S. you have no way of knowing what's in the bottles.

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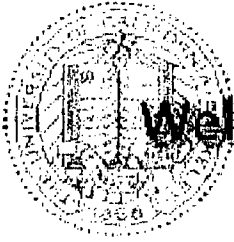
Down the road: In a few years, alpha-lipoic acid may be seen as important an antioxidant supplement as vitamin E. Meanwhile, don't be a guinea pig. Not enough is known now to recommend it. If you have diabetes or heart disease, in particular, you may be unwilling to wait until more research is done. In that case, it is crucial that you talk to your doctor before taking it. The supplement may, for instance, affect the dosage of your diabetes medication.

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Androstenedione

Claims, Benefits: Improves athletic performance.

Bottom Line: "Andro" was made famous in 1998 by Mark McGwire and is taken by many body builders and athletes. Since it can be converted by the body into sex hormones, it's considered an anabolic steroid. It may or may not boost athletic performance. There are many potential adverse effects. No one should take it.

Full article, Wellness Letter, January 1999:

Hormone homers?

It's hard to say what baseball fans and sports writers talked about more: Mark McGwire's single-season record of 70 home runs or his use of androstenedione. Referred to as "andro," this hormone precursor supposedly helped McGwire in his training regimen. However, it takes more than this or any other OTC pill to build muscle, and more than muscles to hit home runs. *Whether or not andro improves athletic performance, it is a bad idea all around.*

Androstenedione was developed as an athletic supplement in East Germany, where it was used mostly for female athletes. The body can convert it either to testosterone (the "male" sex hormone) or estrogen ("female" sex hormone), but which way it will go can't be predicted. Since it can be converted to testosterone, androstenedione is considered an anabolic steroid. (Anabolic steroids are tissue-building compounds in the body, notably testosterone and other "male" hormones, as well as drugs that act like them.) Unlike supplemental anabolic steroids, which are banned in sports, andro has to be converted by the body into testosterone to have an effect on muscles. It's testosterone that helps build muscle and boost sex drive in both men and women.

Does androstenedione work? How much of it is absorbed by the body? How much is converted to testosterone? How long does the testosterone level remain elevated? There is much debate on all these points. According to Dr. Tim Ziegenfuss, assistant professor at Eastern Michigan University, androstenedione does not boost testosterone significantly, and thus is not effective. *But no one really knows.*

In any case, if you take androstenedione, you still need to exercise vigorously in order to build muscle.

Is it safe? There has been little research on the safety of androstenedione, and none on its long-term effects. If it does substantially affect testosterone and/or other hormones, its *adverse* effects could include breast enlargement, testicle shrinkage, increased body hair, blood-clotting disorders, personality disorders (such as increased aggression), liver and heart problems, and accelerated growth of any prostate tumor. It can also interfere with bone growth, which would be a special danger for teenagers. Since androstenedione can be converted into estrogen, some supplement manufacturers add substances that are supposed to prevent that reaction. In that case, the supplement could interfere with the hormone balance in the body.

The problem with experimenting with hormones, or anything that may affect them, is that the body has an elaborate feedback mechanism to maintain balance. Take something that boosts testosterone, and your body may shut off its own supply, which could, among other things, cause the testicles to shrink. It is amazing that such a potentially powerful substance can be bought by anyone as a completely unregulated "dietary supplement."

Though andro isn't banned in professional baseball, basketball, or hockey, it is banned in the National Football League, the NCAA, and the Olympics. The Association of Professional Team Physicians has recommended that it be taken off the market and be banned in all competitive sports. Some health-food stores have stopped selling andro, but it's easier to get than ever, thanks to the Internet and mail order.

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Last words: Unfortunately, with all this publicity, andro is bound to be used by even more body builders, professional athletes, and, scariest of all, teenagers. The labels on some bottles of andro warn that it should not be used by women, children, teens, or anyone with a medical condition. Will teens pay heed? The bottom line: nobody should use andro.

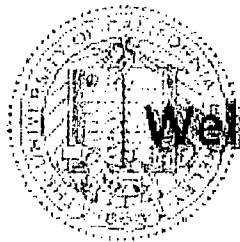
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Full article, Wellness Letter, August 1999:

Wellness Tip

Forget about androstenedione, the hormone precursor and athletic supplement that supposedly helped Mark McGwire hit a record 70 home runs. We wrote in January that no one knows whether andro really works, and that there has been little or no research into its safety. Now the first real study on andro, in the *Journal of the American Medical Association* in June, has found that andro does not do what's claimed: it does not boost testosterone levels in the blood or help build muscle. But it does raise levels of estrogen, which is dangerous for men. Andro can increase the risk of cancer, male breast enlargement, heart disease (by lowering protective HDL cholesterol), and other health problems, according to the researchers.



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Arginine

Claims, Benefits: Prevents or treats heart and circulatory diseases, combats fatigue, stimulates the immune system, cures impotence, fight cancer, etc.

Bottom Line: This amino acid boosts nitric acid, a compound that relaxes blood vessels, and thus may help treat angina and other cardiovascular problems. If you have heart disease, talk to your doctor before taking arginine.

Full article, Wellness Letter, February 2000:

Candy bar in the medicine cabinet

There's a new, heavily promoted "medical food" called the HeartBar, a soy-based candy bar that contains arginine and a batch of other presumably heart-healthy ingredients. It's being explicitly pitched to anyone who has heart disease or circulatory problems, as well as to everyone who is "at risk for heart disease." That's most people. It has a big red heart on the label, and the words "use under the supervision of a physician." But it is sold without a prescription at drugstores, and undoubtedly many people will ignore that advice.

Arginine is an amino acid, one of the building blocks of protein. As a supplement, it is being promoted not only to prevent heart disease, but also to boost muscle growth, improve wound healing, combat fatigue, stimulate the immune system, cure impotence, and fight cancer.

Arginine's greatest potential is to prevent or reduce cardiovascular disease. By boosting nitric oxide, a compound that relaxes blood vessels, it helps keep arteries flexible and boosts blood flow. Many studies, but not all, have found beneficial effects in people with heart and/or vascular disease who take arginine; a few studies actually used the HeartBar.

So why shouldn't everybody take arginine pills or snack on HeartBars to keep their heart and arteries healthy? No one really knows what this isolated amino acid does in the body or what its long-term side effects are. It is known that increased amounts of isolated amino acids can create imbalances with other amino acids and thus have adverse effects. Increased nitric oxide might be dangerous for people with certain medical conditions, such as kidney failure or cancer.

And no one knows what's the best dose: is the amount in a HeartBar the right amount? Would the dose in a pill be better? Each 1.75-ounce HeartBar has 3 grams of arginine; you're supposed to eat two a day. Two bars cost about \$4 a day—more than arginine supplements. The bars also contain lots besides arginine: soy protein, sugars, raisins, sodium, and hydrogenated oils. In addition, two bars contain 500 milligrams of vitamin C, 400 IU of vitamin E (synthetic), and 400 micrograms of folic acid, which are the doses the WELLNESS LETTER recommends. But if you are already taking a multivitamin plus E and C supplements, you wouldn't need these additional vitamins. And two bars would add 360 calories a day to your diet.

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Our advice: If you have angina or other cardiovascular problems, you should be under a doctor's supervision; there are proven drugs that can help. You should not take arginine (or eat HeartBars) without talking to your doctor about it, since if arginine does all it is supposed to do, it is more like a drug than a dietary supplement. HeartBars are also being promoted to doctors. If your doctor suggests that you try HeartBars, propose buying simple arginine pills at the health-food store or drugstore instead. These supplements are cheaper (even if you add in the cost of your vitamin E and C pills). They don't add hundreds of calories to your daily diet, and you won't have to chew your way through 60 less-than-delicious bars a month.

We certainly can't recommend arginine or the HeartBar for healthy people or the millions who only have risk factors for heart disease.

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Beta Carotene

Claims, Benefits: Prevents cancer and heart disease; boosts immunity.

Bottom Line: Don't take these pills if you're a smoker: studies suggest an increase in lung cancer risk for smokers taking them. Beta carotene is plentiful in vegetables and fruits, and is beneficial in this form. The 600 carotenoids are important for health and are found in yellow, red, and deep green vegetables and fruits.

Full article, Wellness Letter, March 2000:

Beta carotene pills: might help, might hurt

Readers sometimes ask us: why does the WELLNESS LETTER advise against taking certain dietary supplements when these "can't hurt and might help"? The fact is, for most supplements, there's little solid evidence for "can't hurt"—or, indeed, for "might help." We're not talking about obvious immediate adverse effects, which are usually well known, but rather long-term harm, such as liver damage over months or an increased risk of cancer over years, which can be determined only by long, large, well-designed studies. Beta carotene provides a good lesson, especially because it was a star among supplements.

There *was* good research—mostly involving beta carotene from the diet—suggesting that this vitamin-like substance could lower the risk of cancer and possibly other diseases. And there was no evidence of adverse effects: the worst thing large amounts of beta carotene could do, it seemed, is turn your skin slightly yellow or orange, which is harmless. Thus, many nutrition experts—including briefly the WELLNESS LETTER—jumped on the bandwagon and recommended beta carotene pills. Then came two first-rate studies showing that beta carotene *supplements* could cause serious harm, at least in smokers. Since then, scientists have been trying to explain what went wrong with beta carotene, and recently some interesting theories have emerged.

Unpredictable effects of antioxidants

This brings us back to the complicated world of antioxidants, which includes beta carotene, as well as vitamins C and E, other carotenoids, and many other phytochemicals (plant chemicals). Antioxidants help deactivate free radicals, unstable molecules that are by-products of cells "burning" oxygen for energy. Free radicals can damage the basic structure of cells and thus lead to chronic diseases (notably cancer and

heart disease) and accelerate the aging process. Plants are vital sources of antioxidants for humans and other animals. In addition, hundreds of dietary supplements now trumpet the antioxidants they contain.

There are many types of antioxidants, and they do different kinds of work. What marketers of supplements never tell you is that not all of it is good work. Antioxidants can certainly deactivate free radicals in a test tube, but in the human body they can sometimes have the opposite effect—acting as *pro* oxidants (see below) instead of *anti* oxidants. That's what the two beta carotene studies showed.

Published in 1996, the CARET study (full name: Beta Carotene and Retinol Efficacy Trial) tested beta carotene and vitamin A supplements in people at high risk for lung cancer—smokers, former smokers, and asbestos-industry workers. The study was halted when it became clear that those taking beta carotene (not even a high dose—just 30 milligrams a day) actually had a higher rate of lung cancer and higher mortality rate than those taking a placebo. The supplements increased the risks only in those who smoked more than a pack a day and/or drank "above-average" amounts of alcohol. The other study, a large Finnish one published two years earlier, yielded similar results.

Smoking was the problem this time...

Why are smoking and beta carotene pills a dangerous mix? The problem is partly the smoking, partly the beta carotene, and partly the oxygen-rich environment of the lungs. Beta carotene is oxidized as it inactivates the free radicals from cigarette smoke, and its antioxidant capacity is "used up." In the process, it can turn into a pro-oxidant or form oxidized by-products, particularly if adequate amounts of vitamins C and E aren't present. It's well known that C and E work together to produce their antioxidant effect. Recent research strongly suggests that these vitamins can also help limit the oxidation of beta carotene and/or recycle it after it is oxidized, so that it won't damage cells. (In fact, any antioxidant can become a pro-oxidant under certain conditions in the body—especially if other antioxidants are lacking, since they protect one another from oxidation.)

Making matters still worse for smokers is the fact that they have low blood levels of vitamin C, so the supplemental beta carotene doesn't have enough C to work with. This scenario puts smokers at increased risk for the oxidative damage that is believed to contribute to cancer. And there are still other theories about how high doses of isolated beta carotene, taken over the long term, might increase the risk of cancer in smokers.

Morals of the story

- **Don't assume that any supplement "can't hurt, might help"** or that antioxidants are always beneficial. The nutrients and other healthful compounds in foods work in a fine balance, which scientists are only beginning to understand. There's also a delicate balance between free radicals and antioxidants in the body. Smoking was the complicating factor with beta carotene, but who knows what factor (sun exposure, alcohol, medication, intense exercise, or a previous diagnosis of cancer, for example) might make supplement X,

Y, or Z dangerous?

- **Don't smoke.**

- **Don't take beta carotene pills if you smoke,** are a former smoker, or are a heavy drinker.

- **Eat lots of fruits and vegetables.** Even if you don't smoke, it's better to get beta carotene from food (carrots, spinach, cantaloupe, etc.) than from pills. There has never been any evidence that the beta carotene in foods poses any danger, perhaps because it comes with many other plant chemicals that all work together. In fact, virtually every study shows that foods rich in beta carotene help keep people healthy—and even reduce the risk of lung cancer.

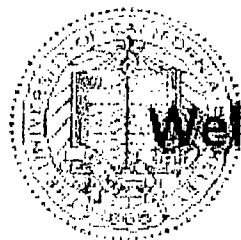
- **The only supplements we recommend are vitamins C and E** (250 to 500 milligrams of C; 200 to 800 IU of E); calcium if you don't consume lots of dairy products; and, for many people, *a basic multivitamin/mineral* (which contains 400 micrograms of folic acid). Few people get that much C from their diet; it's nearly impossible to get that much E from food. A large body of evidence indicates that these doses of C and E are not only safe, but also likely to help keep you healthy. Make sure you take C and E, not just one of them, since they work together and protect each other from oxidation.

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Bilberries

Claims, Benefits: Treat eye disorders, diabetes, and diarrhea.

Bottom Line: These berries contain bioflavonoids that may have beneficial effects, but the research is only preliminary. The effectiveness of bilberry capsules has not been proven. To keep your eyes healthy, you're better off eating fruits and vegetables rich in carotenoids. If you want to try bilberry capsules for diarrhea, there's probably no harm in it.

Full article, Wellness Letter, April 1999:

Keeping an eye on bilberries

Blueberries are among the favorite fruits of nutritionists. Last June we reported that in one test tube study, blueberries ranked No. 1 in antioxidant power—that is, the ability to neutralize cell-damaging free radicals—among a group of common fruits and vegetables. They are also rich in chemicals that have been shown to have anticancer effects in lab animals. This is in addition to the blueberries' vitamin C and fiber—and their wonderful flavor in muffins or a pie or with cereal.

Bilberries are a very close European relative of blueberries. They have a purple interior, unlike blueberries, which are white inside. Blueberries, bilberries, cranberries, and lingonberries all belong to the same genus, *Vaccinium*. At most pharmacies and health-food stores you can now buy a compound extracted from bilberries in capsule form, sometimes combined with other herbs. You can also buy the dried berries in bulk, as well as the leaves—both intended for brewing tea. Many claims are made for bilberry leaves and fruit. Bilberry tea has been used for hundreds of years to treat almost everything.

The RAF in a jam

Proponents of herbal medicine recommend bilberry capsules for a wide array of eye disorders—macular degeneration, cataracts, glaucoma, poor night vision, loss of vision from diabetes, and even nearsightedness. "Nutritional support for the eyes," it says on a typical bottle, but the claims in promotional materials go much further. The capsules are also touted for varicose veins, ulcers, diabetes, kidney stones, and diarrhea. One appealing story about bilberries is that during World War II, RAF pilots ate bilberry jam to improve their vision in night bombing raids over Germany. But did it help?

Nobody knows, but studies done after the war showed that bilberries might decrease night blindness.

What is known about bilberries? They contain chemicals called anthocyanidins (classified as bioflavonoids) that have been shown in animals to promote regeneration of the eye pigment responsible for night vision. Anthocyanidins have also been shown to reduce blood sugar levels and, in some test tube studies, to have anti-cancer effects. They may inhibit inflammation and generally have antioxidant effects, in the eye and elsewhere. One study at the Institut National de la Santé et de la Recherche Médicale in Paris found that anthocyanidins reduced the harmful effects of free radicals on LDL ("bad") cholesterol—at least in the test tube. Laboratories in Italy, Spain, and the U.S. have had some interesting results, too. But what happens in a test tube may not happen in the human body. All this research is preliminary.

Yet promotional books and articles enthusiastically recommend bilberry as "high-tech phytomedicine," capable of curing nearly every visual and vascular disorder, and then some. A more reliable source is the recently translated *Therapeutic Guide to Herbal Medicines from Commission E* in Germany.

The herbals in limbo

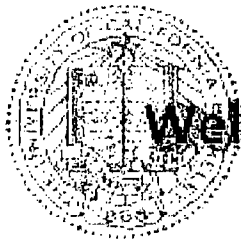
Herbal medicines in this country exist in a regulatory limbo. Manufacturers cannot claim medicinal benefits on packages, but in ads they say almost anything. Packages often claim to contain "standardized" doses, but independent testing often shows that they do not. In Germany, by contrast, herbal remedies are registered with the government and are standardized, so you know what you are getting. An agency called Commission E evaluates the safety and efficacy of herbs, based on scientific knowledge, if any, as well as on tradition.

Here's a summary of the Commission E findings about bilberry/blueberry: The dried fruit, made into tea, is recommended for diarrhea and mild inflammation of the mucous membranes of the throat. Patients are advised to see a doctor if diarrhea persists more than three or four days. That's it.

But the efficacy of bilberry leaf as a treatment for diabetes, kidney and urinary problems, "blood purification," arthritis, gout, and dermatitis has not been documented, says Commission E (which doesn't even mention eye disorders). Animal experiments have shown that high doses of the leaf can be dangerous and can even cause death.

Commission E's bottom line: "Since efficacy has not been documented, a therapeutic use of bilberry leaf preparation is not justifiable in view of the risks involved."

If you want to try bilberry capsules for diarrhea, there's probably no harm in it. However, there are plenty of tested, effective remedies for diarrhea available. And in most cases, diarrhea goes away by itself. But Americans are probably taking the capsules for their eyes, not their gut. If you think something is wrong with your eyes, see a doctor. To maintain eye health, consult "The sight-saving diet" in our January issue. It tells how certain foods may help your eyes stay healthy. Bilberry capsules are not a treatment for eye disorders, diabetes, or other diseases.



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Black Cohosh

Claims, Benefits: A natural way to treat menopausal symptoms.



Bottom Line: Little is known about its benefits and its risks. If you try it, tell your physician, since it might interact with other medications you are taking.

Full article, Wellness Letter, February 2001:

Black Cohosh: Was Lydia E. Pinkham on to Something?

"A positive cure," proclaimed the label, "for all those painful complaints and weaknesses so common to our best female population." In the plainer language of our times, Lydia E. Pinkham's Vegetable Compound—a famous patent medicine and one of the great best-sellers of yore—claimed to cure menstrual cramps and menopausal symptoms, as well as nervous tension and other conditions. Its chief ingredient was black cohosh (**Cimicifuga racemosa**, a.k.a. black snake root or rattleweed), a native American plant long used to treat "female complaints" when these symptoms could not be mentioned in polite society.

The vegetable compound was a tincture—that is, the herbs were dissolved in alcohol. At 36-proof, it was more alcoholic than wine. Some people thought this was Lydia's true secret. You can still buy Lydia Pinkham's, now reformulated with vitamins E and C and other substances, and not quite as alcoholic. It no longer contains black cohosh. (If you have any antique Lydia Pinkham's bottles, by the way, they have become valuable collector's items.)

Black cohosh, used in various products (such as Remifemin or Black Cohosh Power), is still one of the best-selling herbs for menopausal symptoms. Some women see it as "natural" and prefer it to hormone replacement therapy.

Should they?

That's a hard question to answer, because although the herb has been much studied, evidence is still pretty thin. Some studies have found that it relieves hot flashes, sweating, headaches, and other menopausal symptoms—but few of these studies have been well designed. Some researchers think black cohosh contains plant estrogens and thus has hormonal effects, but the latest reports have found no estrogens or

hormonal effects. It's unknown whether black cohosh has any effect, positive or negative, on breast cancer risk. And it is also not clear whether women taking birth control pills or hormone replacement therapy can safely take black cohosh.

The possible side effects of black cohosh include stomach upset, headache, dizziness, and weight gain. Women who are pregnant or breast feeding should steer clear of it. It seems to increase the risk of miscarriage. Even its advocates (one of them is the herb expert Varro Tyler) say that women who decide to try it for menopausal symptoms should not take it for more than six months, though others say three months. Since so little is known about it, and there's no guarantee how much of it is in any given product, it's difficult to say how these experts arrived at such a conclusion.

Other claims: Black cohosh was used at one time to treat joint pain, and it does contain salicylates, which are similar to the compounds in aspirin—but in amounts too small to have a therapeutic effect. It may be a mild sedative, so avoid taking it if you are taking tranquilizers. And it may interfere with hypertension medication.

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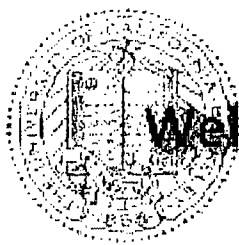
Final thoughts: If you try black cohosh, be sure your physician knows. Ask whether it might interact with other medications you are taking. Black cohosh is an interesting herb. Perhaps good studies will one day be done, so that you could be more certain of its benefits and side effects. Thus far its traditional uses and benefits have no solid support from scientific research.

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Blue-Green Algae

Claims, Benefits: Prevents cancer and heart disease and boosts immunity.

Bottom Line: This is not a medicine or a good source of nutrients. It is easily contaminated. Children should not take it.

Full article, Wellness Letter, November 1999:

Algae alert

Blue-green algae (BGA)—including types known as *Aphanizomenon* and *Spirulina*—has become a big and growing business. Marketed as a nutritional supplement with miraculous healing and health-giving powers, *Aphanizomenon* is chiefly harvested from Upper Klamath Lake in southern Oregon and then freeze-dried and sold in capsules and other forms. Though many marketers sell BGA, by far the largest manufacturer is Cell Tech, which sells its "Super Blue Green Algae" via some 350,000 distributors in this country. In 1997 we questioned the value of all BGA and pointed out that algae was easily contaminated.

Recently Canadian health authorities alerted parents to the potential dangers of contaminated BGA. Other algae growing in the same water with BGA can manufacture very toxic substances called microcystins, which are similar to the red tides that pollute the ocean occasionally. In large doses microcystins produce acute liver failure, brain damage, and death. Microcystins in drinking water, though not a common pollutant, are a danger to people, fish, and farm animals. It's not known, however, how much microcystin in BGA would be enough to make a person sick.

Little people, big risks

What concerned Health Canada (the equivalent of the U.S. FDA) is that marketers of BGA, including Cell Tech, recommend it for children, both for the alleged nutritional benefits and for treatment of Attention Deficit Disorder. There's no evidence of any benefits for children, and particularly not for Attention Deficit Disorder. According to Dr. Charles Holmes, a biochemist at the University of Alberta whose lab pioneered testing methods for microcystins, some samples of BGA had microcystin levels 50 times higher than the upper limit set by the World Health Organization for safe levels in water. Cell Tech claims that its product is safe, but Holmes calls that a "facile argument," since no one knows what a safe limit is. Because of their lower body weight,

and because they are still growing, children are more susceptible to toxins than adults. It takes less of a given toxin to make them sick.

Another problem: Even if BGA has low levels of toxins, people tend to consume it every day, providing constant exposure and a possible buildup in the body.

Dr. Duncan Gilroy, a toxicologist with the Oregon Health Division, is mindful of the economic impact these safety concerns could have on the BGA industry in Oregon—an industry that's almost wholly self-regulated. Testing 36 samples of BGA in 1997, he found microcystins in 35 of them. The FDA has recorded 46 "adverse events" from people taking BGA but does not yet know if the algae really was the cause of the various illnesses reported. The FDA is working with the Oregon Department of Agriculture to develop better tests but has issued no health advisories. Dr. Gilroy thinks children should not take this product.

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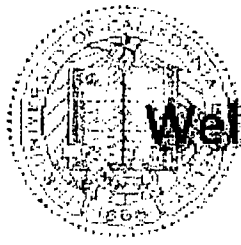
Words to the wise: What about adults? There's no evidence that BGA has any health benefits. A search of the Internet reveals that even a number of "alternative medicine" advocates, in addition to mainstream scientists, question the value of BGA. Dr. Varro Tyler, probably the most famous and respected herb expert in the U.S., has stated that BGA is unimpressive as a source of nutrients. Eating a carrot would do you more good.

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Calcium

Claims, Benefits: Helps keep bones strong; prevents or slows osteoporosis.

Bottom Line: Women over 50 (postmenopausal) and men over 65 may need supplements if they don't get 1,500 milligrams a day from food. Younger people need at least 1,000 milligrams a day (about three servings of milk, yogurt, or cheese). The supplements should be taken at meals and should be combined with an exercise program. Calcium should also come from dietary sources, such as low-fat or fat-free milk, dairy products, and some leafy greens.

Full article, Wellness Letter, October 1997:

Answering your calcium questions

Readers send us many queries about calcium supplements. This roundup, we hope, will answer most of your questions. Your goal should be to consume at least 1,000 milligrams of calcium a day, or 1,500 milligrams if you are a woman over 50 or a man over 65.

Don't rely exclusively on supplements. Get as much calcium as you can from foods. Foods contain other important nutrients, some of which promote calcium absorption. Best sources: An eight-ounce serving of plain nonfat yogurt has 400 milligrams, a cup of skim milk has 300. (Nonfat dairy products are slightly richer in calcium than low-fat or whole-milk ones.) Half a cup of some kinds of tofu contains 250 milligrams. A three-ounce serving of sardines with bones contains 370 milligrams; a cup of kale, 95; and a cup of broccoli, 70.

Does calcium need an acidic stomach environment in order to be absorbed?

Yes, but this is a non-issue if you take your calcium with food. Some older people are deficient in stomach acid, but all they need to do is take their calcium with meals, when the stomach secretes enough acid to dissolve the supplement.

When should I take a supplement?

With meals. This increases the likelihood of absorption. The presence of other nutrients (such as vitamin D and certain amino acids) also promotes absorption.

How much calcium should I take at a time?

Not more than 500 milligrams. If you're taking 1,000 milligrams a day, divide it into two doses.

How much is too much?

Up to 2,500 milligrams daily is considered safe. Dr. Robert Heaney, a calcium research scientist at Creighton University in Omaha, thinks 1,500 is the advisable upper limit. You absorb only about 10% of what you ingest. The rest is excreted.

What does USP mean?

These letters on a label mean that the product meets the U.S. Pharmacopeia's standard for dissolving and for dosage. Buy a supplement labeled "USP."

Which form of calcium is best?

It makes little or no difference. But be sure to read the labels: check the milligrams of calcium you're getting per pill, not the amount of calcium gluconate or calcium citrate or whatever it is. Calcium has to be combined with something else: carbonate, citrate, lactate, phosphate, or gluconate. No pill is pure calcium. All these forms will dissolve reliably if they meet USP standards. *Plain calcium carbonate, as found in antacids, contains the most calcium per pill at the lowest price.* If you buy calcium citrate or any of the other forms, you'll have to take more pills, sometimes many more, to get the same amount of calcium. Not only do you need more, they also cost more per pill.

Do calcium supplements contain lead?

This should not be a worry now. Research by the Natural Resources Defense Council (NRDC) showed that some supplements contained more than the federal limit of 7.5 micrograms of lead per 1,000 milligrams of calcium. This was mainly of concern for children and pregnant women taking calcium supplements. Since then Leiner Health Products, which manufactures most of the nation's calcium supplements, has agreed to produce only supplements that contain less than 0.5 micrograms of lead per 1,000 milligrams of elemental calcium; other manufacturers are expected to follow suit. (Lead occurs everywhere, and it's not possible to guarantee absolutely lead-free food or supplements.) The NRDC has also petitioned the FDA to reduce its allowable limit to 0.5 micrograms per 1,000 milligrams, and it appears that the problem is now under control. Tums, by the way, has consistently tested lowest in lead, while dolomite and bone-meal calcium have been more likely to be high in lead.

What about such claims as "no starch," "no preservatives," "all-natural," "free of yeast," "high potency"?

Don't pay extra for pills that make these meaningless claims.

Does phosphorus interfere with calcium absorption?

No. Most foods contain phosphorous, but this should not interfere with calcium absorption. It's okay to take calcium in the form of calcium phosphate.

What about the oxalates in spinach and other foods?

Oxalate is a substance that binds calcium. In foods high in oxalates (cocoa, soybeans, and spinach), this can decrease absorption of the calcium *in those foods* (since the oxalates are already bound with the calcium), but not the calcium in other sources consumed at the same meal. The aluminum in some antacids can also decrease calcium absorption. Some kinds of fiber affect absorption-for example, wheat bran may reduce it somewhat. If you eat a wheat bran cereal for breakfast, you might wait and take your supplement at lunch.

Is the calcium in fortified orange juice well absorbed?

It probably is, though it has not been thoroughly tested.

Will I get more out of pills I chew or pills I swallow?

Chewables are probably best absorbed. The dissolving process starts in your mouth.

Can women on hormone therapy take less calcium?

If you're on hormones, 1,000 milligrams a day is probably enough, since your body will better utilize the calcium you consume. But there's no harm in aiming for 1,500 milligrams.

Words to the wise

- Get as much calcium as possible from food.
- Buy by price. Check for "USP" on the label. Calcium carbonate is the cheapest and most popular form. If it gives you gas, try taking smaller doses or switching to calcium citrate.
- Take your supplement with meals to aid absorption.
- Take no more than 500 milligrams at a time.
- If you are taking thyroid hormones, the antibiotic tetracycline, corticosteroids, or iron pills, talk with your doctor or pharmacist. Calcium can interact with these and other drugs.

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<http://www.berkeleywellness.com/supplements/dsSupCalcium.html>

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Chaparral

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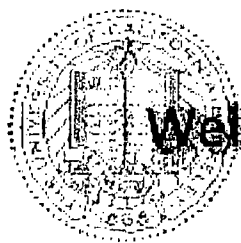
Claims, Benefits: Anticancer activity, "blood purifier," arthritis remedy.

Bottom Line: This has no proven medicinal value; unsafe for human consumption. Cases of liver disease and acute poisoning have been linked to consumption of chaparral. The American Herbal Products Association does not recommend it.

This information was part of a major article on herbal medicine in the WELLNESS LETTER, September 1997.

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Cholestin

Claims, Benefits: Lowers cholesterol, reduces the risk of heart disease.

Bottom Line: A variety of red yeast, derived from fermented rice, Cholestin contains the same ingredient found in one of the leading prescription cholesterol-lowering drugs. If you have high blood cholesterol, try life-style changes first. If these don't work, talk to your doctor about a cholesterol-lowering drug. Cholestin is one option, the least expensive by far.

Full article, Wellness Letter, April 1998:

The nondrug drug that lowers your cholesterol

It's Cholestin, made by the Pharmanex Company and sold not as a drug but as a "natural dietary supplement" that will lower your total cholesterol and raise your HDL ("good") cholesterol. Furthermore, Pharmanex says that Cholestin, under the name of Hong Qu or Hung-chu, appears in the ancient Chinese pharmacopeia and has been "used to promote the health of the cardiovascular system" for two thousand years. According to Dr. Varro Tyler, an authority on herbal medicine, some studies from abroad show that an extract of what is sold as Cholestin in this country can lower cholesterol by 25 to 40 points, when combined with a diet and exercise program.

What exactly is Cholestin? It's a variety of red yeast, *Monascus purpureus*, derived from fermented rice. The fact that Cholestin lowers total cholesterol and raises HDL should come as no surprise. It contains exactly the same ingredient—lovastatin—that Merck's Mevacor contains. Lovastatin is derived from fermentation, too (though another species of yeast is used), and is one of a group of "statin" drugs used to lower cholesterol. Cholestin sells for about one-fourth the price of a prescription drug such as lovastatin or pravastatin (brand name Pravachol).

But is Cholestin as safe and effective as the prescription drugs? The manufacturer claims it's even better because it hasn't been "purified." In fact, that simply creates problems. Cholestin contains elements that inhibit cholesterol formation, plus other chemicals whose action we do not understand. We know what's in Mevacor—it has only one active ingredient. We can predict, with some certainty, what it will do, although no one yet knows what its long-term effects are. Furthermore, a physician must determine whether you need Mevacor, and should then monitor you regularly for such potential side effects as liver damage.

Drug or "dietary supplement"?

If you need a doctor's advice and supervision to take cholesterol-lowering drugs, is it safe to self-prescribe Cholestin? Who'll check you to see if it's working or if there are side effects? Is it safe to take it over long periods? Safe for people who don't even know their cholesterol levels and take it "just in case"?

These questions have brought the FDA into the fray. If this product contains a drug, it must be a drug, according to the government. Pharmanex has countered with a lawsuit, saying that this herbal product has been shown to lower cholesterol. To market a drug, a company is required to prove safety and efficacy, but this is not the case with Cholestin, or any dietary supplement.

This controversy is a natural outgrowth of the Dietary Supplement Health and Education Act (DSHEA), passed by Congress in 1994 after intensive lobbying by the supplements industry. The law allows the industry to make extensive, unproven claims for products, so long as the claims are not medical. But the line between medical and nonmedical is easy to cross.

For example, Pharmanex states that Cholestin lowers LDL cholesterol, raises HDL cholesterol, and lowers serum triglycerides, but that it is not intended for treating a disease. Why lower cholesterol except to treat or prevent disease? Isn't this a medical claim? The courts will now have to make this decision.

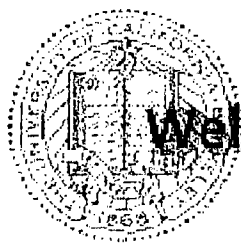
DSHEA leaves it up to the government to prove that a product is harmful. In practice, of course, there are no funds for any such investigations, and thus American consumers are serving as the subjects in a wide variety of casual experiments. Merck at least had to test Mevacor. If the FDA accepts Cholestin as an herb, under DSHEA Pharmanex is not required to submit data to the FDA.

What should you do?

We recommend life-style changes rather than medication as the first line of defense for lowering blood cholesterol. If you know that your total cholesterol is above 200 and/or your HDL is below 35, the first thing you need is not a "supplement," but professional advice. You need to switch to a low-fat, low-cholesterol diet, adopt a program of aerobic exercise, lose weight, and quit smoking if you smoke. If these measures don't work, you and your doctor may want to consider a drug, depending on your age and other risk factors for heart disease. Should the drug be Cholestin? That's a matter for you and your doctor to decide. We'd vote for a proven, standardized medication. At this point nobody knows if Cholestin is better or worse than lovastatin. In any case, you'll need to continue with your heart-healthy life-style.

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Parting thoughts: If Cholestin works like a drug, it is a drug. Don't take it without professional advice, and certainly not "for good measure." And remember, "natural" or "herbal" does not necessarily mean harmless. Mother Nature manufactures very potent toxins.



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Memory and Brain Supplements

Claims, Benefits: Improve memory and brain function in people with dementia, as well as in healthy people.

Bottom Line: We advise you to forget one thing—the claims of made for memory/brain supplement. So far, there's no pill that will make you smarter or help you recall a name or find your keys.

Full article, Wellness Letter, October 2000:

Memory Pills: Should You Forget About Them?

One day you may be able to take a pill—or eat a food—that will improve your memory. In drug and health-food stores and on hundreds of Internet sites, you'll find a plethora of products that claim to improve your brain power, and in particular to correct the memory problems most of us experience as we grow older. Such claims are easy to make, since no proof is needed. Here's a small sample of what's out there.

Ginkgo biloba

This herb is all the rage for memory dysfunction. As we reported in January 1998, one small study showed that ginkgo biloba improved behavior and mental function in some Alzheimer's patients—modestly and for a limited time. It was about as effective as tacrine, a not-very-successful prescription drug. Other small studies have had similar findings. But commercially available ginkgo products probably do not contain the same preparation of herbs used in the study. Ginkgo biloba does show promise for treating circulatory disorders. But even the many European doctors who use it do not claim that it cures anything. *No good study has shown ginkgo to be beneficial for healthy older people with normal memory problems.*

Ginseng

This herb undoubtedly has pharmacological effects, but there's no consistent evidence to support its use as a memory builder. A recent review in the *European Journal of Clinical Pharmacology* found that research on the benefits of ginseng has been inconclusive and called for more rigorous investigations. Until good studies are conducted with real, standardized ginseng, we're still in the dark.

Vitamins

Some research has suggested that low blood levels of B vitamins (folic acid, B-6, and B-12) go along with impaired mental abilities in older people. For instance, a study conducted in Calgary, Alberta, found that mentally impaired people commonly had low blood levels of folic acid. That may simply reflect their poor eating habits. Other research has found that high levels of vitamin C or E are associated with reduced memory loss. All this may mean is that a diet rich in these vitamins promotes health in general. It's unlikely that well-nourished people can improve their memory by taking vitamin pills.

Choline

Found in most foods and now classified as a nutrient, this compound performs many important functions in the body. Among other things, it is essential for brain development in the fetus, and laboratory rats given prenatal choline supplements have better memories as they age than other rats. A recent article in *Science* theorizes that humans who get a high level of dietary choline early in life may indeed be more intelligent and retain their mental abilities as they age. But no one knows whether consuming choline later in life has any effect at all. Meats and vegetables are rich in it.

Phosphatidylserine (PS)

This substance, found in all our cells, is now a hot supplement, boosted by a book called *The Memory Cure*. Don't fall for the extravagant claims made by the book. Some studies suggest that PS has slight benefits as a treatment for Alzheimer's, but there's no indication that it can improve memory in healthy people.

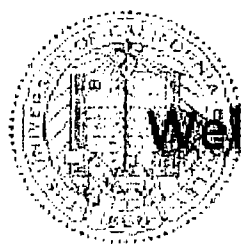
Huperzine A

This supplement, derived from a type of Chinese moss, is now under study as a potential Alzheimer's drug. Doctors in China use a purified form of it for treating dementia. But there's no proof yet that it will help people with Alzheimer's, and certainly no indication that it will help healthy people improve their memory.

Second thoughts

Forgetfulness as you grow older does not mean you have dementia. Moreover, there are many kinds of dementias, including Alzheimer's. If you are experiencing severe problems, you need a medical diagnosis. Some dementias are reversible. Four pre-prescription drugs have been approved for treating Alzheimer's—unfortunately, none of them works very well.

Until further research is done on ways to correct memory lapses, we advise you to forget one thing—the claims of supplement makers. So far, there's no brain supplement that will help you recall a name or find your keys. To keep your mind functioning at a high level, mental workouts are best. Use the powers you have. Cultivate your interests, learn something new, take a course, read more. Play games that exercise your memory, your powers of concentration, and your analytic ability. Physical workouts also help maintain your brain, as does a healthy diet. For more details, see the WELLNESS LETTER, January 1999.



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Chondroitin Sulfate

Claims, Benefits: Halts, reverses, or cures arthritis.

Bottom Line: Taken with glucosamine, this is a popular "cure" for osteoarthritis. There is less evidence supporting the use of chondroitin than for glucosamine. Studies have yet to show that it is safe over the long term. If you want to try it, let your doctor know, particularly if you are diabetic. Side effects have been reported.

Full article, Wellness Letter, December 1999:

What about the arthritis "cure"?

Will glucosamine and chondroitin sulfate supplements cure or relieve arthritis? This may still be the most frequent query we get from readers, second only to questions about vitamin E. A best-selling book claims that glucosamine and chondroitin sulfate cure osteoarthritis, the joint disease that commonly affects older people. There's an avalanche of other hype about them in the market place, too. People in chronic pain can hardly be blamed for trying anything that comes along.

Our first report on glucosamine and chondroitin sulfate, in 1997, concluded that nobody knew much about these supplements but that—as an adjunct to proven treatments—they might help reduce pain and would probably do no harm. One problem is that you don't really know how much glucosamine and chondroitin sulfate are in the bottles. This is a hit-or-miss proposition, since there's no standardization, and no guarantee that you're getting what the labels say.

Both glucosamine and chondroitin sulfate occur in the body and are vital to cartilage formation. It's the wearing down of cartilage that causes pain, and it's easy for advertisers to convince people that swallowing these substances could help. But there's no evidence that the chondroitin you swallow is absorbed. Though nothing is known for sure yet, studies are underway. The Arthritis Foundation has called for further study, as has the American Academy of Orthopedic Surgeons. The National Institutes for Health may soon be undertaking a long-term study that will answer the outstanding questions.

Here's the latest news, plus a few facts to keep in mind:

- A few lab studies have shown that glucosamine stimulates the

growth of cartilage and/or keeps it from degrading.

- Some studies have shown that glucosamine relieves the pain and stiffness of osteoarthritis as effectively as aspirin or ibuprofen. Most of the studies used 500 milligrams of glucosamine three times a day. But the studies were short, and many had flaws (for example, osteoarthritis was not always properly diagnosed). It takes about four weeks for the supplement's effects to be felt.
- Though glucosamine and chondroitin sulfate are marketed as "natural," the term is meaningless. The compounds are highly processed-extracted from crustacean shells and other animal by-products.
- A recent article in *The Lancet* points out that glucosamine, even in very low doses, can have adverse effects on blood sugar levels, possibly increasing insulin resistance. Many people with osteoarthritis are older and overweight, and have diabetes or are at risk for it. It's not known that the supplements actually harm diabetics or bring on diabetes, but they might.

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Last words: No studies have yet shown that glucosamine and chondroitin sulfate are safe and effective in the long term. If you want to try them, let your physician know, particularly if you are diabetic. Side effects have been reported, including headaches, nausea, leg pain, itching, and drowsiness. Pregnant women should avoid these supplements.

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Chromium Picolinate

Claims, Benefits: Builds muscle, prevents and treats diabetes, promotes weight loss.

Bottom Line: Chromium is an essential mineral, but deficiency is rare in the U.S. There's no evidence that chromium picolinate supplements perform as claimed, promote weight loss, or benefit healthy people. There is some evidence that they may harm cells. Diabetics should take only on medical advice.

Full article, Wellness Letter, June 1999:

New study tarnishes chromium

We've always had doubts about the benefits—and more importantly, the safety—of chromium supplements. Millions currently take chromium picolinate in the hope of preventing or reversing diabetes, reducing blood cholesterol, and building muscle. Weight loss is even touted as one of its benefits. But the evidence is mounting that these supplements can do more harm than good.

Chromium is an essential trace mineral found in a wide variety of foods. It is important in the burning of carbohydrates and fats in the body, and helps insulin do its work of making blood sugar (glucose, our basic fuel) available to cells. Nobody is sure how much chromium we need to stay healthy, but some experts worry that we don't get enough. Chromium in food is not easily absorbed by the body. Chromium picolinate—the form of the mineral commonly sold as a supplement—is more easily absorbed.

Three years ago a laboratory study from Dartmouth College showed that chromium picolinate could damage the genetic material of hamster cells. This raised the question of whether it might cause cancer in humans. The response from the supplements industry was indignant: "bad science," they cried. It's true that it was only a lab study, and that what happens to hamster cells in a test tube might not happen to human cells in the body. But then again, this kind of genetic damage can be a warning signal.

Now a new study conducted by Dr. John Vincent at the University of Alabama at Tuscaloosa shows that chromium picolinate enters the cells directly and stays there—where it can cause problems. In fact, the chromium picolinate reacts with vitamin C and other antioxidants in the cells to produce a "reduced" form of chromium capable of causing mutations in DNA, the genetic material. It's the combination of

chromium and picolinate (particularly the reduced form) that can produce dangerous compounds—not the chromium alone. Moreover, the picolinate eventually breaks off and itself has adverse effects.

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Words to the wise: There's little evidence that chromium deficiency is widespread. Some very preliminary research suggests that chromium picolinate can reduce blood sugar in people with Type 2 diabetes, the most common form of the disease. But that's a far cry from a reliable treatment for diabetes, which is not a chromium-deficiency disease. There is no good evidence backing chromium picolinate as a weight-loss aid, a muscle-builder, or a way to reduce blood cholesterol levels. This new evidence does suggest that it may have serious side effects. Nobody should take chromium picolinate, especially not young people.

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Full article, Wellness Letter, August 1996:

Chromium loses some of its shine

Millions of Americans now take chromium picolinate, a supplement that its manufacturers claim will promote weight loss, prevent or reverse diabetes, reduce blood cholesterol, and build muscle. These claims appeal to everybody from young athletes to elderly people with chronic diseases, so no wonder chromium picolinate sales are booming. It's sold as a dietary supplement, so the FDA can't touch it unless it can be proved to cause harm.

Interestingly, a new laboratory study from Dartmouth College found that chromium picolinate can damage chromosomes, thus raising the question of whether it could cause cancer. The response from the supplements industry was indignant and massive—ads, press releases, news conferences—plus accusations of "bad science." A "Chromium Information Bureau" was even set up.

The study is worth looking at a little more closely. Of course, it had the limitations of all lab studies. It used hamster cell cultures, and nobody knows if the findings would apply to people. Though the industry claimed that the dosages used in the Dartmouth study were massive, they were not. Levels of chromium picolinate in the cells being tested were about what you would have in your own cells if you took the supplement daily. Chromium doesn't just wash out of the body the way some nutrients do; in fact, minerals tend to accumulate in the body. Other forms of chromium did not damage the cells in this study. *So it probably wasn't the chromium that did the damage to the hamster-cell chromosomes, but the picolinate.*

Diane Sterns, one of the study's authors, pointed out that the safety of chromium

picolinate and the long-term effects of chromium accumulation in humans are poorly understood. This study is not definitive, and further research is warranted.

News, or non-news, for diabetics?

Despite claims to the contrary, diabetes is not a chromium-deficiency disease. Just recently, a new study (unpublished but widely publicized) of diabetics in China found that high doses of chromium picolinate were helpful in controlling blood sugar. But even the author of the study called the results "preliminary." Many studies of other forms of chromium as a treatment for diabetes have been conducted in the U.S., with disappointing results. Few diabetics have been helped by chromium. Again, more studies will have to be done. Meanwhile, if you have diabetes, it's not a good idea to start taking chromium picolinate on your own, let alone to discontinue medical treatment in preference for a health-food supplement of unproven safety and effectiveness.

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Words to the wise: Chromium is indeed a mineral the body needs. But there's little evidence that chromium deficiency is widespread. And there's no evidence whatsoever that these supplements help you lose weight, build muscle, or lower cholesterol. Chromium is found in water, beverages, and practically everything we eat. Don't take chromium picolinate, and you needn't worry about its potential to cause harm.

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Wellness Guide to Dietary Supplements

CLA

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Claims, Benefits: Causes weight loss, makes dieting easier, and helps keep fat off.

Bottom Line: Studies have been intriguing, but have had inconsistent results. The long-term risks are completely unknown.

Full article, Wellness Letter, February 2001:

Can CLA Prevent Weight Gain?

Lately CLA supplements have been attracting the attention of scientists. It takes a brief chemistry lesson to explain what this substance is and what it might do. CLA stands for "conjugated linoleic acid," a group of polyunsaturated fatty acids derived from linoleic acid. It occurs in very small amounts in meats such as lamb or beef as well as in dairy products. Little is known about it. The foods that contain the highest level—cheese and beef—are not foods you should be consuming in large amounts.

The claim for CLA supplements is not that they produce weight loss by themselves, but that they make dieting easier and help keep fat off. We each have a certain number of fat cells, and we can never rid ourselves of them. But losing weight is a matter of reducing the amount of fat these cells contain, and there's some evidence that once you've reduced body fat by dieting, CLA may somehow keep you from filling up your fat cells again once you stop dieting. But research on this is only in its early stages, and studies in humans are scarce. One good study by scientists at the USDA and the University of California, Davis, found that CLA capsules did *not* affect body fat or weight.

There's other news about CLA from a few early studies. It may have antioxidant effects (like so many other substances in foods), reduce the risk of heart disease, and/or lower insulin levels. Its anti-cancer effects are under investigation. But this is all largely theoretical and comes mostly from animal studies.

If CLA produces any benefits, they would come only from large amounts—more than you can get from food. Nobody knows whether such high levels are safe. And no one understands the long-term benefits and risks.

Maybe in a few years, research will tell us more. CLA supplements may prove to be a

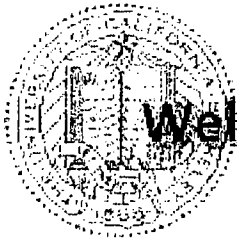
useful for dieters or for other purposes. For now, it's too early to say, and we suggest that you wait and see.

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Coenzyme Q-10

Claims, Benefits: Prevents and treats heart disease; cure-all.

Bottom Line: This interesting antioxidant may be effective against heart failure. Talk to your cardiologist about it if you have heart disease. It is expensive, and its benefits for healthy people remain unproven.

Full article, Wellness Letter, April 2000:

Looking again at coenzyme Q-10

Coenzyme Q-10 (CoQ-10), which we last looked at in 1996, is one of the most popular dietary supplements—not just in this country, but around the world, especially in Japan. It's claimed that CoQ-10 prevents and/or combats many disorders, including heart disease, cancer, AIDS, lung disease, hypertension, gum disease, obesity, impaired immunity, chronic fatigue syndrome, asthma, Alzheimer's, allergies, and aging itself. In recent years much research on CoQ-10 has confirmed that it is indeed a very important substance. But even so, the clinical research is still in its infancy—and thus the marketing claims remain overblown.

CoQ-10 is necessary for generating energy in all human cells—as well as in all living organisms. First isolated in 1957, it was named ubiquinone because it belongs to a class of compounds called quinones, and because it's ubiquitous. It also acts as a powerful antioxidant, meaning that it helps prevent the cellular damage caused by free radicals in the body. CoQ-10 is manufactured by the liver; it is also found in many foods, but is most concentrated in meat and fish. CoQ-10 is one of many substances (including DHEA and melatonin) in the body that tend to decline as people age and/or develop certain diseases (such as various cardiac conditions and Parkinson's). But that doesn't mean that the lower levels of CoQ-10 *cause* aging or disease, or that supplemental CoQ-10 will combat or reverse the effects of aging or disease.

What the studies show

Interest in CoQ-10 began after early research in Texas showed that CoQ-10 supplements can help treat otherwise unresponsive congestive heart failure and certain other heart problems. Studies since then have had inconsistent results. Further clinical trials are underway.

An international conference on CoQ-10, held in 1998 in Boston but only recently published, included three dozen studies and reports. Among the findings: CoQ-10 may work even better than vitamin E against two kinds of free radicals. But, unfortunately, it can also "auto-oxidize"—that is, it can become a free radical itself under some circumstances. Vitamin E can prevent this, however. Indeed, studies suggested that these two substances work synergistically, as do many other antioxidants—such as vitamins C and E, beta carotene, and alpha-lipoic acid.

Another study found that the more CoQ-10 there is in LDL ("bad") cholesterol, the less susceptible it is to oxidation. It's theorized that the oxidation of LDL increases plaque development in artery walls. Vitamin E also helps reduce the oxidation of LDL, thus reducing the risk of heart attack. Other researchers at the conference reported that the cholesterol-lowering drugs known as "statins" (which include lovastatin and the dietary supplement Cholestin) reduce the body's synthesis of CoQ-10, but the health effects of this are unknown.

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Most of these studies and presentations were highly theoretical and/or preliminary, merely suggesting potential benefits of CoQ-10 supplements.

Keep in mind: There's still no solid clinical evidence that CoQ-10 supplements benefit healthy people. So why not take them just to be safe? There doesn't seem to be any danger, but no one knows what the long-term effects are. CoQ-10 costs about \$15 to \$30 a month for typical doses. The large doses of high-potency capsules some advocates are recommending for heart patients cost as much as \$6 a day.

If you have heart disease, talk to your cardiologist about CoQ-10. If you're taking CoQ-10 on your own, make sure your doctor knows. Make sure you also take vitamins E and C. And don't think that CoQ-10 can take the place of proven, reliable treatments.

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Creatine

Claims, Benefits: Improves athletic performance.

Bottom Line: Some studies show that this amino acid boosts muscle strength short-term in young, highly trained subjects. It serves no purpose for casual exercisers or players. You're better off with a solid training program.

Full article, Wellness Letter, January 1998:

The creatine craze

Most ergogenic aids—supplements that are supposed to improve athletic performance—are a waste of money. Creatine is a relatively new one, however, that has been getting lots of attention from both researchers (notably at the most recent meeting of the American College of Sports Medicine) and athletes (from Olympic track contenders to professional and collegiate athletes). It has been likened to carbohydrate-loading, except that the latter boosts performance in endurance (aerobic) events such as marathons, while creatine is used for short-term, high-intensity (anaerobic) activities such as sprinting, jumping, and weight lifting. But creatine supplements certainly aren't for recreational athletes, and even competitive athletes should think twice before trying them.

Creatine is an amino acid, but unlike most amino acids it is not incorporated into protein. It's found primarily in meat, poultry, and fish. In the body it's found mostly in the muscles (in the form of creatine phosphate), where it plays a unique role in energy production—it helps restore a compound called adenosine triphosphate, or ATP, which supplies quick energy. It also helps reduce the lactic acid that accumulates in muscles during intense exercise; lactic acid produces a burning sensation and thus limits the amount of intense exercise you can do. Most people usually get 1 to 2 grams of creatine a day from their food. The body also makes it in the liver, pancreas, and kidneys.

Most studies suggest that creatine supplements do boost short-term muscle strength and the body's ability to perform activities involving rapid bursts of energy. Athletes who might benefit include basketball, soccer, hockey, and football players, as well as those participating in short track-and-field events or competitive rowing. For instance, in one study of cyclists, those taking creatine were better able to pedal intensely for short bursts. In two studies, creatine increased the maximum weight people could lift or

boosted the number of repetitions they could perform. In those studies in which creatine didn't help, the researchers suggested that the substance wasn't taken long enough or in large enough doses. The typical regimen is 20 grams a day during the first five or six days to "load" the muscles, then 2 grams a day as maintenance. This is supposed to boost the creatine stored in the muscles by as much as 40%.

Why few, if any, should try it

As interesting as creatine is, the following concerns remain:

- The studies have all been small and short (and usually sponsored by companies that make the supplements). Most have involved only young, highly trained subjects. Not all the studies have had positive results.
- The long-term health effects of high doses of creatine are unknown. Taking creatine supplements may depress the body's own synthesis of the substance. At 6 grams a day, kidney damage is a possibility, though probably not if you limit that high dose to a few days. And as with any supplement, there's no guarantee that the creatine is pure, since there's little or no government regulation.
- Your muscles can store only so much creatine. If your levels are high, taking the supplements will have little or no benefit. It's hard to predict who will have high or low levels of creatine, though vegetarians tend to have low levels, and men seem to have slightly lower levels than women. Moreover, it's estimated that 20 to 30% of people don't respond to creatine supplements, regardless of the levels in their muscles.
- Creatine would help only in activities that require those short, explosive bursts of energy, lasting less than a minute. That would limit its usefulness to only a small group of athletes. It won't help with aerobic performance, and may, in fact, impair it. That's a big drawback, since most sports and types of exercise call for both aerobic *and* anaerobic energy.
- When creatine does improve performance, the difference is small. While even a small edge might be important for a competitive athlete, it is meaningless for casual exercisers or players.
- The creatine regimen isn't simple (you take it four times a day). It comes in pills, powders, capsules, and liquids, but the powdered form is most common. It's expensive (cheaper brands simply contain less of the stuff). And the powder tastes lousy, even when mixed with a sweet drink.
- Finally, if creatine turns out to provide a definite advantage to certain athletes, it may provide an unfair advantage and thus its use

may be banned from competitions, like steroids or certain prescription drugs.

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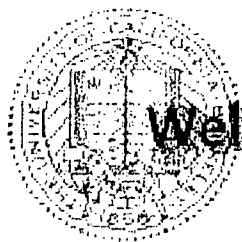
And keep in mind: If you want to run, swim, or cycle faster, you're better off with a solid training program. One way to improve your performance is to boost the intensity of your workouts with interval training—bouts of vigorous exertion alternating with lower-intensity recovery periods.

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Wellness Guide to Dietary Supplements

DHEA

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Claims, Benefits: Slows aging, prevents chronic diseases, cures some cancers.

Bottom Line: This human hormone may have powerful positive or negative effects—it's too soon to know. But what you get in the health-food store may not be DHEA. If the supplement really works like a hormone, then it's risky business.

Full article, Wellness Letter, February 1999:

DHEA: unraveling the mystery

"Promising," "tantalizing," "interesting"—that's how many scientists describe DHEA, the mystery hormone that's for sale as a "dietary supplement" in most drugstores and health-food stores. It's promoted as a "clinically proven fountain of youth" and a panacea in ads and catalogues and on the Internet. At the same time, many of these same scientists look upon the sale of DHEA pills as alarming—"a recipe for disaster," in the words of Dr. Peter Casson of Baylor College of Medicine in Houston. Dr. John Renner of the University of Missouri School of Medicine in Kansas City, quoted in the *Journal of the American Medical Association*, cautions against taking DHEA. But if you do take it, he suggests that you keep track of the batch number, save the last five pills from each bottle, and buy only from a large health-food store chain that can "afford to be sued in case of adverse reactions."

We think you should avoid DHEA and not worry about lawsuits. This was our advice three years ago, and nothing has emerged to change our minds. But here's an update, in case you've recently tuned in to DHEA.

DHEA (dehydroepiandrosterone) is a hormone manufactured in the human adrenal gland; other primates also produce it. DHEA-sulfate, or DHEAS, is a related form of the hormone. There's more DHEAS circulating in the body than any other hormone. It's a "precursor" hormone—that is, it is a basic chemical that the body uses for different purposes. It can be converted to androstenedione, and then to testosterone or estrogen. Production begins in the fetus, stops at birth, resumes around age 7, peaks at about age 25, and then begins to decline. By age 70 production falls to one-fifth or as low as one-twentieth of what it was at age 25. If a hormone goes along with youth and vigor and then almost disappears, it's logical to wonder whether it might prevent or slow aging as well as the chronic diseases of aging. But DHEA, discovered in the 1930s, does not easily yield its secrets.

Research so far: mostly confusion

Most of the studies so far have been with lab animals, chiefly rodents. This is a drawback because rodents produce negligible amounts of DHEA, and the results in rodents probably don't apply to humans. In any case the results have been unclear: sometimes DHEA seems to improve rodent immunity or confer other benefits, while in other studies DHEA appears to cause cancer. Studies of humans have also yielded confusing results. It's much too early, most scientists think, to launch big clinical trials, since so little is known about the basic biology of DHEA. No one even understands what it does in adults, except that it affects many bodily systems.

At least 21 studies of DHEA have been done in people, using widely varying doses and administered either by injection or orally. Researchers are interested in its possible effects on the cardiovascular, immune, digestive, and nervous systems—and in whether it promotes or protects against tumor growth, as well as obesity. But no answers have been forthcoming. Studies of DHEA and immunity in older people have had disappointing results. An early study found that high blood levels of DHEA are associated with a lower risk of heart disease—in men but not women—but this is far from definite. Other studies suggest that high natural levels of DHEA are linked to a lower risk of breast cancer in premenopausal women, but to a higher risk in postmenopausal women. As reported in the *Journal of the National Cancer Institute* in September, a study found that postmenopausal women with the highest blood levels of DHEAS (occurring naturally, not administered experimentally or as a supplement) had the *highest* risk of breast cancer.

But studies continue, here and in other countries. DHEA might prove useful against such immune-system disorders as lupus or AIDS. It might slow aging. On the other hand, it may prove to *promote* cancer. Little is known about lesser side effects, which in women may include the growth of unwanted facial hair, male-pattern baldness, deepening voice, and acne.

It's not possible to say of DHEA, as is often said of various herbal remedies, "it's widely used in other countries." No country with a regulatory system for drugs allows DHEA to be sold over the counter. In Canada it is not available even by prescription. In the United Kingdom it is available on a limited basis by prescription only, but there are no approved uses. In Italy it is in wide use, apparently, but only by prescription.

But is it really DHEA?

DHEA is a substance so poorly understood and so potent that you may wonder how it can be sold as an unregulated product. Would you want to buy over-the-counter testosterone, another potent hormone that may cause cancer in large doses? Some women do take estrogen, of course, but only by prescription and only after consultation with a physician. And as we reported in December, hormone replacement therapy (HRT) is by no means advisable for all women. But whatever the drawbacks of HRT, it is one of the most intensively studied treatments in modern medicine. At least there's a body of knowledge on the subject.

Because of the U.S. Dietary Supplement Health and Education Act of 1994, which relaxed the rules for "dietary supplements," DHEA can be sold without testing, so long as the label makes no specific medical claims. DHEA doesn't even exist in foods, except in the adrenal glands of monkeys and other primates, which are not sold for human consumption.

To add to the confusion—and perhaps it's a lucky break for the public—what's sold as DHEA may not be DHEA. Our bodies synthesize DHEA from cholesterol, but what's sold over the counter is synthesized from plants (which don't contain any cholesterol). Wild yam extracts and soy do contain substances that can be converted into human hormones such as DHEA and cortisone, but only by a long, complex manufacturing process. Scientific investigators require (and get) a product that's pure and consistent—the real thing. However, the wild yam extracts billed as DHEA in stores are plant products that the body can't convert to DHEA or any other hormone. Even if the product you buy does contain real DHEA, there's no guarantee it has the amount claimed on the label.

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Last words: DHEA is not a "natural medicine" and not a dietary supplement—and how the FDA could allow it to be classified as such remains a mystery. What's currently on the market is probably a complete waste of money. If this supplement really works like a hormone, then it's risky business. The only certain benefit is a profit for those who sell it.

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Wellness Guide to Dietary Supplements

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Echinacea

Claims, Benefits: Cures colds, boosts immunity.

Bottom Line: Though the supplements are prescribed in Germany for colds and flu, studies on them have yielded conflicting results. The plant is a complicated mix of chemicals; some might actually stimulate the immune system or promote healing. But you don't know what you're getting in the bottle. Little is known about toxicity. To be safe, don't take it if you have lupus, rheumatoid arthritis, tuberculosis, or multiple sclerosis, or are HIV-positive or pregnant.

Full article, Wellness Letter, July 1998:

Echinacea: a complicated mix

Will echinacea boost your immune system? Cure cancer? Prevent or cure the common cold? Promote wound healing? Sold at health-food stores and elsewhere, it comes in tinctures (dissolved in alcohol), capsules, pills, and teas. Whether you take this herb or not, you've almost certainly had it recommended to you: it has a devoted following. An ounce and a half of liquid can cost up to \$15. Even the teas come at a premium price.

Nine kinds of echinacea grow in this country, the most common being echinacea purpurea. Known as purple coneflower, the plant is part of the sunflower/daisy family, and its extracts (and those from similar plants) have been used medicinally for centuries. Like all plants, it is a complicated mix of chemicals; some of these might actually stimulate the immune system or promote healing. It has been extensively studied, but with conflicting results. One study recently found that a commercially made supplement did seem to stimulate immune cells-but in a test tube. In some studies involving humans, echinacea seems to have no effect on colds or immunity; in others, it seems to help. In most studies that find echinacea to be an immune booster, however, the herbal extract was injected, which is not possible with the products on the market here. Studies of echinacea taken by mouth have had inconsistent results. The commercial preparations you can currently buy in this country have not been tested at all.

In addition, there's the problem of quality control: like all herbal products, echinacea is completely unregulated. What you're buying may not contain much, if any, echinacea. And nobody knows what a proper dosage might be. No one even knows what the active ingredient is, though 15 different compounds have been identified. No clinical

trials have been done with any of these compounds. The herb has been around a very long time, and few adverse side effects have been reported. But anything, whether herb or drug, that is powerful enough to have benefits could also have side effects. Some researchers think it could have an adverse effect on T-4 cells, an important component of immunity.

Here's a list of people who should *not* try echinacea: those who know they're allergic to daisies, plus those with diseases such as lupus, rheumatoid arthritis, tuberculosis, and multiple sclerosis. Those who are HIV-positive, including those with AIDS, should not experiment with it, nor should pregnant or nursing women and small children.

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Last word: Until the government sets labeling standards and requires herbal manufacturers to meet them, consumers will continue to be part of the current haphazard marketplace experiment. Since the manufacturers of echinacea can already claim almost any benefit in ads and promotional materials, why should they actually commission solid scientific studies? The pity of it all is that herbs might have real value as medicine if we understood them better, could buy them in standardized form, and knew how much of them to take.

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Ephedra

Claims, Benefits: Weight control, herbal "high," decongestant.

Bottom Line: This is a form of the active ingredient used in many decongestants and asthma drugs. It raises heart rate and blood pressure, and is dangerous for those with high blood pressure, heart disease, or diabetes. FDA has proposed restrictions on it. Used in so-called "Herbal Phen-Fen" pills for weight loss, it can be dangerous.

Full article, Wellness Letter, October 1999:

Wellness tip

Avoid any herbal supplement containing ephedra, also known as ma huang. It can be dangerous, particularly for people with high blood pressure or a heart condition. This year in New York City, a 37-year-old woman died of stroke after taking a sports supplement containing ephedra-only the latest of dozens of deaths linked to the amphetamine-like substance over the years. Ephedrine, the active ingredient of ephedra, is used in many over-the-counter decongestants and asthma drugs, but with clear warning labels about possible side effects and drug interactions. It is also used in weight-loss products. Texas recently proposed a ban on all supplements containing natural ephedra, but ran into industry opposition. Ohio, Washington, Florida, and Texas do limit the amount of ephedra in a given "serving." In most states you have no idea how much you're getting. The FDA has proposed restrictions but so far has taken no action.

UC Berkeley Wellness Letter, October 1999

Full article, Wellness Letter, December 1997:

Herbal diet drugs: a slim chance

A reader has written that she was losing weight with Pondamin-the prescription diet drug recently taken off the market-and asks whether she should try the nonprescription diet drug called Herbal Fen-Phen. Nutri/System outlets and health-food stores have for some time been selling Herbal Fen-Phen, which Nutri/System makes. It combines two powerful herbs, St. John's Wort (an antidepressant) and ephedra. Also called ma huang,

ephedra has been touted for weight control and as a mind-altering drug. There are a number of other herbal concoctions on the market for weight loss, some with names and ingredients similar to Herbal Fen-Phen. Some contain laxative herbs, which are always to be avoided as dieters' aids. (For more about St. John's Wort and herbal remedies in general, see the Wellness Letter, September 1997.)

Even when they had FDA approval, we were never enthusiastic about Redux (dexfenfluramine) or Pondimin (fen-fluramine), the latter often used in combination with a stimulant called phentermine and casually known as "fen-phen." The FDA has withdrawn dexfenfluramine and fenfluramine (but not phentermine) because it now turns out they may promote heart disease and other serious side effects in some people. Another real drawback: nobody can take them forever, and you gain back lost weight when you stop using the drugs (see WELLNESS LETTER, July 1996).

St. John's Wort, apparently effective against mild depression, should not be taken in combination with any other antidepressant. Ephedra is dangerous for people who already have high blood pressure, heart disease, or diabetes, as many obese people do. The FDA has proposed (but not yet enforced) restrictions on the use of ephedra, which has been associated with serious side effects in large doses and even some 18 deaths.

Experimenting on the consumer

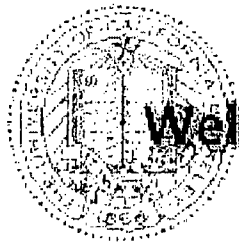
There are as yet no firm federal guidelines on ephedra. If it were a drug, the manufacturer would have to demonstrate safety and efficacy. But since it's technically an herbal remedy, no such restrictions apply. Based upon the best calculations we can make, the dose in the diet pills appears to exceed the maximum dose the FDA proposes as safe. No one knows whether Herbal Fen-Phen works or what its side effects might be. Vague testimonials back it up, plus advertising. It has never been tested, but scientific research is now underway. We urge you to wait for the results. Nutri/System should have had to wait for results, too, rather than hiding behind the misleading notion that herbs are natural and thus always harmless.

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Evening Primrose Oil

Claims, Benefits: Cure-all.

Bottom Line: In England, this is an approved treatment for breast pain and allergic dermatitis and eczema. It has also been advocated for high cholesterol, rheumatoid arthritis, and diabetic nerve damage but the studies have been uneven or poor. It may have side effects.

Full article, Wellness Letter, March 1998:

Down the primrose path?

Native to North America, the evening primrose is a tiny and short-lived wildflower and not a true primrose. When Europeans found it and took it to Europe, its purported healing properties for skin diseases and flesh wounds quickly earned it the name "King's cure-all." Evening primrose is now grown in 30 or more countries, and the oil pressed from its seed is marketed as a nutritional supplement and indeed as a miracle drug.

Essential fatty acids

Like other nuts, seeds, and fruits (including olives, rapeseed, corn, and so forth), evening primrose seeds contain some vitamin E, and in addition what are known as essential fatty acids (EFAs)-so called because the body needs them in order to function properly, but does not produce them. We have to consume them. The chief EFAs are linoleic acid and linolenic acid, both of which are plentiful in foods. It's almost impossible to imagine a diet deficient in EFAs.

Evening primrose oil, however, is a source not only of linoleic acid but also of another kind of fatty acid called gamma-linolenic acid (also known as gamma linolenic acid, or GLA). This fatty acid, normally manufactured by the body from linoleic acid, is important in many ways. It is transformed by the body eventually into eicosanoids, hormone-like chemicals that include the prostaglandins. The latter control such processes as inflammation, blood clotting, and cholesterol synthesis.

Since the body produces its own GLA, why consume it in evening primrose oil? According to the label on one bottle of evening primrose gel capsules, "modern diets and lifestyles" may block conversion of linoleic acid into GLA. That's an interesting

claim, but it has never been shown to be true. It is true that in several diseases, such as cancer, eczema, multiple sclerosis, and diabetes, the body seems to have a decreased ability to convert linoleic acid into GLA. But this is a long way from saying that swallowing GLA will cure or prevent these diseases.

Evening primrose oil on trial

There have been a large number of scientific studies of evening primrose oil. In England it is an approved medical treatment for breast pain and eczema, and is widely used for premenstrual syndrome, psoriasis, high cholesterol levels, rheumatoid arthritis, asthma, and nerve damage in diabetics.

So why aren't American doctors jumping on the bandwagon? There's actually little good clinical evidence that the oil has any benefits. An article in the *British Medical Journal* in 1994 concluded that although the oil was in wide use, there was hardly any justification for such use because the studies were flawed. However, the author called evening primrose oil "an interesting substance," and thought it might prove promising for such conditions as diabetic neuropathy, rheumatoid arthritis, and other ailments. Further research was called for. That's pretty much the situation today—*studies since 1994 have had conflicting results, but most have been negative*. At least there's no evidence that the oil is toxic or produces any side effects except occasional headaches and nausea.

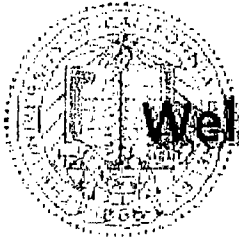
Paying more, getting less?

As is usual with the herbal market in the U.S., there are other problems, too. Evening primrose oil comes in liquid form or soft-gel capsules (like vitamin E), and occasionally tablets. Most studies have used the capsules. Some products on the market may be adulterated with other vegetable oils or may have decomposed. You can buy some brands with standardized doses, but nobody knows what the right dose might be, or whether a healthy person would need any at all. Capsules cost anywhere from 10 to 30 cents apiece. And you're advised to take three to six daily. If you took the larger dose, that could run from \$18 to \$54 a month—a lot of money for the EFAs you can get easily and cheaply from food.

Dr. Varro Tyler, an expert on plant medicines who is generally favorable toward them, is not convinced that evening primrose oil is efficacious. He also points out, in *The Honest Herbal*, that there are no data to support the safety of long-term consumption. Because evening primrose oil is so expensive, some people have turned to borage seed oil or blackcurrant oil (also called beebread or starflower oil), another rich source of GLA. However, borage may contain liver toxins and should probably be avoided until more is known about it.

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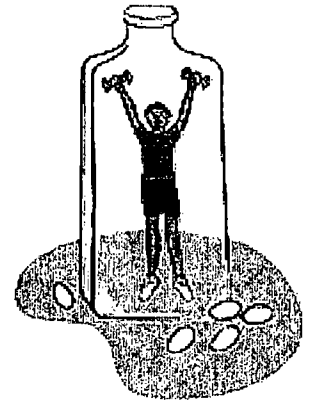
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Exercise in a Bottle & Fat Trapper

Claims, Benefits: One claims to help your body burn calories while you're standing or sitting, even while you're sleeping, so you never have to exercise. The other supposedly blocks the absorption of fat "permanently."

Bottom Line: No product can do this. The FTC has banned the claims.

Full Article, Wellness Letter, August 2000:



Baloney in a bottle

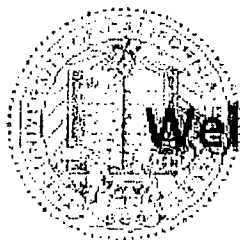
You'll be glad to know you'll never again see the TV info-mercial for "Exercise in a Bottle" and "Fat Trapper," two pricey diet aids made by Enforma Natural Products. In April the Federal Trade Commission (FTC) finally told Enforma to stop making its false and/or unsubstantiated claims; the company agreed to refund \$10 million to buyers. But the deceptive claims are still being made on the Internet, and Enforma continues to advertise the supplements with toned-down ads.

What were the claims? Exercise in a Bottle "helps your body to burn calories while you're standing or sitting . . . even while you're sleeping," so you never have to exercise. Fat Trapper is supposed to "permanently" block the absorption of fat, so you can eat "fried chicken, pizza, cheeseburgers . . . and stop worrying about the weight." No product can do this, of course.

There are countless diet aids like these. Most do nothing; many are potentially dangerous. Watch out for claims such as the following: "Lose 30 pounds in 30 days" (the faster you lose weight, the more likely you'll gain it back); "Lose weight while you sleep"; "Lose weight permanently" (90% of people regain lost weight); "Scientific breakthrough . . . medical miracle"; "Guaranteed weight loss—or your money back" (good luck).

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Feverfew

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Claims, Benefits: Treats headaches, menstrual irregularity, and fever.

Bottom Line: Though studies of feverfew as a migraine preventive have had confusing results, people suffering from migraines might want to try it. Canada's Health Protection Branch recognizes feverfew as a nonprescription drug for preventing migraines. But in Canada, standardized doses of the dried leaves are sold over the counter, while in the U.S., commercially available preparations usually have very little plant material in them. Feverfew may interact adversely with aspirin.

Full Article, Wellness Letter, September 1999:

A daisy for migraines?

A common garden flower (*Tanacetum parthenium*) sometimes called a "summer daisy," feverfew has been used as a medicinal plant since medicine began—and is one of the most interesting and potentially valuable of herbs. It's been used to treat headaches, menstrual irregularity, and fever. Experiments with animals have shown that it may reduce inflammation as well as the hormone-like substances known as prostaglandins; among other effects, prostaglandins play a role in producing pain sensations and migraine. Feverfew's actions might resemble those of aspirin, and it might therefore prove useful in treating arthritis. But no one is sure which chemical in the plant may have medicinal effects.

Studies of feverfew as a migraine preventive have had confusing results. One or two have shown that the leaf of the plant can prevent (not relieve) migraines, meaning that you'd have to take it all the time. In a recent issue of *Cephalalgia* researchers in the Department of Complementary Medicine at the University of Exeter in England reviewed the clinical work on feverfew and concluded that the jury was still out. As quoted in a later interview in *Lancet*, one of these researchers, Dr. Edzard Ernst, doubted that feverfew's active compound had been identified. Still, people suffering from migraines might try it: "It's not expensive, it's not risky, and it has helped in some studies." Convincing evidence may be a long time in coming because drug companies are unlikely to commission research on something they cannot patent.

Canada votes yes

If you want to try feverfew, you may be wasting your money on what you find in the

drugstore or health-food store. Dr. Varro Tyler, an American herb expert interested in the potential of feverfew, says that commercially available preparations usually have very little plant material in them. If you have feverfew in your garden—and are certain that's what it is—you could try the fresh leaves: two to three leaves daily taken with food is the dose recommended by herb experts. An infusion (that is, tea) is another way to take feverfew. Canada's Health Protection Branch recognizes feverfew as a nonprescription drug for preventing migraines and reducing the nausea and vomiting that sometimes accompanies them. In Canada, standardized doses of dried leaves are sold over the counter.

Side effects may include mouth ulcers, stomach irritation, and nausea. Feverfew may interact with aspirin, so if you take aspirin or any anti-inflammatory drug regularly, talk with your physician before trying feverfew. If you are allergic to chamomile, ragweed, and yarrow—or if feverfew gives you a rash—you should steer clear of swallowing it. There's some evidence that if you take it and then discontinue its use, you can get rebound headaches. No one, of course, knows what its long-term effects might be.

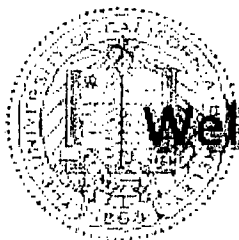
Children and pregnant or nursing women should not take this herb.

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Fish Oil

Claims, Benefits: Prevents heart disease, treats diabetes, alleviates auto-immune disorders, plus many other claims.

Bottom Line: Fish oil contains heart-healthy omega-3 fatty acids. Many studies find some beneficial effect, especially against heart attacks, but the results have been surprisingly inconsistent—especially regarding supplements, which can have adverse effects. We recommend fish, but not fish oil capsules. If you have rheumatoid arthritis or psoriasis, however, the capsules may be worth a try.

Full Article, Wellness Letter, March 1999:

Fishing for answers

Fish has been seen as a cardiovascular hero ever since it was observed years ago that Eskimos and Japanese people who eat lots of fish have a low rate of heart disease. The theory is that fish oil lowers cholesterol and triglycerides, makes blood less sticky, and perhaps even decreases blood pressure. Beyond the heart benefits, it's claimed that fish can alleviate rheumatoid arthritis, psoriasis, and other auto-immune disorders. Even more health claims are made for fish-oil capsules, which take up lots of shelf space in health-food stores and drugstores. *Fish is good food, certainly, but let's not go overboard. Here are the fish facts.*

Note: When we use the term "fish oil" below, we mean the oil you get by eating fish or taking capsules. While population studies look at fish consumption, clinical studies almost always use fish oil capsules. It's generally assumed that the supplements provide the same health benefits as the fish itself. However, there may be other beneficial compounds in the fish not found in the capsules.

What's special about fish oil?

The fat in fish is rich in polyunsaturated fatty acids called omega-3s, the major marine types being eicosapentenoic acid (EPA) and docosahexenoic acid (DHA). Fatty fish are the richest sources. Like aspirin, these omega-3s make platelets in the blood less likely to stick together and may reduce inflammatory processes in blood vessels. Thus they reduce blood clotting, thereby lessening the chance of a heart attack.

Does fish oil lower elevated cholesterol?

Yes, according to some studies; no, according to others. If you *substitute* fish for meat (or for other sources of saturated fat), you will lower your blood cholesterol. But the same would happen if you replaced the meat with beans or other foods low in saturated fat. Thus, when researchers control for saturated fat intake, the effect of fish on cholesterol often turns out to be minimal, at best.

What about triglycerides?

Large amounts of fish oil are known to reduce triglycerides, the major type of fat that circulates in the blood. While some scientists believe that even moderately elevated triglycerides are an independent risk factor for heart disease, this is still unclear, as is what level should be considered "high."

Does fish oil lower elevated blood pressure?

Once again, the studies have had contradictory results. If there is an effect, it would take large doses, and the effect would be small.

So what effect does fish have on the risk of heart disease?

Most population studies find some beneficial effect, especially against heart attacks, but the results have been surprisingly inconsistent. Interestingly, some important studies—notably the Harvard Health Professionals Follow-up Study in 1995—have found that fish consumption doesn't reduce the risk of heart disease, but may reduce the risk of *dying* from it. A 1997 study that followed 1,800 men from the Chicago area for 30 years found that those who ate at least eight ounces of fish a week had a 40% lower risk of *fatal* heart attack than those who ate no fish (the study didn't look at nonfatal heart attacks).

Some research has also looked at fish's effect on the risk of sudden cardiac death. In 1998 the Physicians Health Study found that men who ate fish at least once a week had a 50% lower risk of sudden cardiac death, but at least three studies contradict this.

Why this sea of contradictions?

Much of the debate about fish oil is theoretical, not based on data from clinical studies. Perhaps if fish oil does protect the heart, it may not be by obvious means such as lowering blood cholesterol, triglycerides, or blood pressure. For instance, some studies suggest that omega-3s may be beneficial because they modulate electrical activity in the heart, thus making the heart less susceptible to dangerous, sometimes fatal, rhythm abnormalities.

In addition, in population studies that compare fish eaters to those who eat no fish, it's possible that the people who eat no fish have a less healthy life-style. Researchers adjust the data for such "confounding factors," but can't control for everything.

Can fish oil help treat diabetes?

Probably not. Some researchers are hopeful about this, but studies thus far have not found consistent benefits. In fact, some have shown that fish oil may actually impair

blood sugar control in diabetics and perhaps also *raise* their blood cholesterol.

What about rheumatoid arthritis and other inflammatory disorders?

This may be where fish holds the most promise, though the research is preliminary. Fish oil may help relieve inflammatory symptoms of these auto-immune diseases by suppressing the immune response. More than a dozen studies have suggested that high doses of fish oil supplements taken long term and *with pain medication* can reduce joint swelling, ease morning stiffness, and lessen fatigue in people with rheumatoid arthritis. There is also some preliminary evidence that fish oil may help reduce the itching and redness of psoriasis, another auto-immune disease.

Don't some plants contain omega-3s, too?

Yes. But leafy greens and some vegetable oils (such as walnut, flaxseed, or canola) contain only the short-chain omega-3 linolenic acid, not the longer-chain fatty acids found in fish oils. Fish are able to convert the linolenic acid in algae and other sea plants into EPA and DHA, but humans can do so only to a limited degree.

Do high doses of omega-3 capsules have adverse effects?

There are some serious concerns:

- The decreased ability of your blood to clot has a negative side, notably an increased risk of hemorrhagic stroke. People with bleeding disorders, those taking anticoagulants, or those with uncontrolled hypertension (who are already at high risk for a stroke) should *definitely not* take fish oil capsules.
- Large doses can cause nausea, diarrhea, belching, and a bad taste in the mouth.
- Like all fats, omega-3s are concentrated sources of calories: some recommended doses supply 200 calories a day.
- Fish oil in liquid or capsule form may contain pesticides or other contaminants. These are usually removed in the manufacturing process, but there's no guarantee.
- Cod liver oil is overly rich in vitamins A and D, which can be toxic in high doses. There's no reason to take it.
- Large doses of fish oil may suppress certain aspects of the immune system.

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Last words: We recommend fish, but not fish oil supplements. Exceptions: if you have rheumatoid arthritis or psoriasis, fish oil capsules may be worth a try, but consult your doctor. Fish itself is one of the best foods around. Besides its oil, it is rich in

protein, iron, B vitamins, and other nutrients, and it can take the place of meats that are high in saturated fat. Studies finding that fish enhances cardiovascular health suggest that two servings a week are enough. In fact, a higher intake of fish isn't necessarily better for your health.

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Flaxseed

Claims, Benefits: Prevents heart disease and cancer.

Bottom Line: Flaxseed oil is heart-healthy because it contains alpha-linolenic acid. Flaxseed itself (ground or whole) also contains lignans, which may have antioxidant actions and may help protect against certain cancers, though this is far from certain. Skip flaxseed supplements, though.

Full Article, Wellness Letter, June 1999:

Just the flax facts, please

Should you eat flaxseed? Use flaxseed oil for cooking and salads? Take flaxseed supplements? Will flaxseed in any form lower blood cholesterol and prevent heart attacks? Is flax more powerful than other seeds and oils? Flax is a particularly interesting plant that is under study at the National Cancer Institute and other research centers.

The flax plant, an old friend of humanity, yields the fiber from which linen is woven, as well as seeds and oil. The oil, also called linseed oil, has many industrial uses-as an ingredient in paints, varnishes, and linoleum, and as a finishing oil for wood furniture. It also comes in an edible form, sold mostly at health-food stores. Like olive, canola, and most other plant-derived oils, it is highly unsaturated and is thus a healthful choice to replace saturated fats from animal products. Flaxseed, from which the oil is extracted, can be eaten whole or ground into flour.

Some people now believe that flaxseed and its oil are special-that their health effects are greater than those of other seeds and oils. The background is complex.

The alpha-linolenic story: oil

Flaxseed and flaxseed oil are by far the best food source of alpha-linolenic acid. This is one of the essential fatty acids-that is, it's essential for life, and we must consume it in foods, because our bodies cannot manufacture it. Essential fatty acids are important for cell membranes, blood pressure regulation, and other functions. Alpha-linolenic acid is an omega-3, similar to some of the fatty acids in fish oil. (Another essential fatty acid is linoleic acid, an omega-6, found in most vegetable oils, which has a different function in the body.) Consumption of fish and fish oil has been linked to a reduced risk of dying

from heart disease, though it is unclear how it does this.

But alpha-linolenic acid is not identical to the omega-3 fatty acids found in fish oil. The body does convert alpha-linolenic acid from plant foods into those omega-3s, but very slowly and inefficiently. It's a longer process than getting the omega-3s directly from fish.

Flaxseed may be the best food source of alpha-linolenic acid, but the evidence for specific heart benefits from flaxseed is very thin. A few population studies have linked a high *total* intake of alpha-linolenic acid with a reduced risk of heart disease and/or death from heart disease. And recently a French study found that a "Mediterranean diet" relatively rich in alpha-linolenic acid greatly reduced the risk of second heart attacks (see WELLNESS LETTER, May 1999). However, the alpha-linolenic acid in that study did not come from flaxseed, but from a canola-oil margarine. Besides flaxseed and canola oil, alpha-linolenic acid is also found in soybean oil and walnuts. *You don't have to consume flaxseed to get alpha-linolenic acid.* If flaxseed oil (or the seeds, which contain the oil) does lower blood cholesterol, that should come as no big surprise, since any unsaturated oil, particularly if substituted for saturated fats, will do so.

The lignan story: seeds

Besides alpha-linolenic acid, flaxseed is also rich in certain phytochemicals (plant chemicals). Notably, it is the richest source of lignans, which provide fiber. Lignans are also a type of phytoestrogen (isoflavonoids are another type). In the process of digestion, bacteria convert lignans into estrogen-like substances called enterodiols and enterolactone. These may have anti-tumor effects. Phytoestrogens are also found in other plants, including soy, certain herbs, whole grains, and other seeds. Lignans and other flaxseed components may also have antioxidant properties—that is, they may reduce the activity of free radicals, which cause damage at the cellular level. Studies have shown that flaxseed can reduce tumors in lab animals. So far there's no convincing evidence of a similar action in humans, though some ongoing studies may provide answers. In addition, lignans may play some role in lowering cholesterol and possibly in maintaining bone density. Flaxseed oil usually does not contain lignans, though some processors do add some lignans back into the oil.

It is increasingly difficult to single out any one plant food as unique or miraculous. All plant foods have good things to offer. Garlic and onions apparently have a range of beneficial chemicals; so does tea. So do the herbs we use for flavoring, such as rosemary, thyme, parsley, sage, and so forth. Broccoli and other cruciferous vegetables have anticancer potential. Canola and olive oil and other highly unsaturated oils help lower blood cholesterol. So do oats, which contain the same kind of fiber found in flaxseed.

Adding flaxseed to your diet

It certainly can't hurt to add flaxseed and its oil to a healthy diet—one based on fruits, vegetables, whole grains, nonfat dairy products, and small amounts of fish and meat, and thus low in saturated fat and cholesterol. But adding flaxseed to a poor diet is not likely to help much.

Flaxseed flour or ground or whole flaxseeds can be found in some breads, muffins, cereals, and breakfast bars, particularly in health-food stores. Flaxseeds have a pleasant, nutty flavor and are tasty sprinkled on salads, cooked vegetables, or cereals. (However, unless the seeds are well chewed or ground, they simply pass through the body.) You may want to combine flaxseed flour with wheat flour for baking. The seeds and the oil spoil quickly: the oil comes in dark bottles to extend its shelf life; the oil, once opened, as well as ground flaxseed and flour, should be refrigerated. And the oil is expensive.

Two cautions: in rare instances people may have allergic reactions to flaxseed (anaphylactic shock, as from bee stings or nuts). Flaxseed is high in fiber, so increase water intake along with it.

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And supplements too? Flaxseed supplements, which usually contain ground seeds plus vitamin E, are gaining popularity. We do recommend taking supplemental vitamin E (200 to 800 IU daily). But skip the flaxseed capsules. If you want to make flaxseed part of your diet, consume the oil or the flour, not the supplements.

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Folic Acid

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Claims, Benefits: Prevents certain birth defects, heart disease, possibly some cancers.

Bottom Line: There is solid evidence for these claims. All women capable of becoming pregnant should get 400 micrograms of folic acid a day from a supplement, in addition to what they get from food. Other people not eating a good diet (fruits, vegetables, fortified grains and cereals) should also consider taking a multivitamin containing folic acid.

Full Article, Wellness Letter, November 1997:

Preventing heart disease: B vitamins could be the big players

What science has learned about heart disease in the past 30 years may seem encyclopedic. Yet in the search for ways to prevent heart disease, more mysteries than certainties remain. Blood cholesterol, which plays a key role in coronary artery disease (CAD) and heart attacks, is not the whole story. Your genes matter, and what you eat matters-but in ways not yet fully understood. As we reported two years ago, the relationship between certain B vitamins and an amino acid (one of protein's building blocks) called homocysteine, which circulates in your blood, may turn out to be as important as blood cholesterol in determining your risk of heart attack and stroke.

Homocysteine seems on its way to becoming a household word. The story begins about 1969, when Dr. Kilmer McCully (then of Harvard and now at the Veteran's Medical Center in Providence) began studying a rare genetic disorder called homocystinuria, a disease that causes premature hardening of the arteries and death by heart attack or stroke at a young age.

As a result of their genetic defect, people with homocystinuria produced high amounts of homocysteine. Everybody produces this substance, but in the normal course of events it is converted into other nondamaging amino acids. In healthy people this is accomplished by three B vitamins-folacin (probably the most important one, also called folate or, when used as a supplement or to fortify foods, folic acid), B6, and B12. If the conversion does not take place rapidly enough due to a genetic defect or some other reason, such as a vitamin deficiency, elevated levels of homocysteine may damage arterial walls and promote the buildup of cholesterol, leading to blockage. It has taken years for researchers to recognize the importance of this finding.

Solving the puzzle of arterial damage

An impressive number of new homocysteine studies have appeared since our article in 1995. In the *Journal of the American Medical Association* in June, a study of 1,500 men and women in 19 European medical centers found that those who ranked in the top 20% for homocysteine levels had double the risk of heart disease-similar to the increased risk from smoking or high cholesterol. But people in the study who took supplements of folacin, B6, and B12 cut their risk substantially. A study in *Circulation* found a link between heart disease and high homocysteine levels even in young women-a group in which heart attacks are rare-particularly when the women were deficient in folacin. A Dutch study, published in *Arteriosclerosis, Thrombosis, and Vascular Biology*, found that every 10% rise in homocysteine levels brought a corresponding increase in heart disease risk. This is just a sampling of the homocysteine news.

Of course, homocysteine has not "replaced" cholesterol as a health concern. (Don't go back to cream and butter!) Blood cholesterol levels above 200 milligrams per deciliter of blood, as well as low levels of HDL ("good") cholesterol, are known to increase the risk of CAD. But the homocysteine theory fills in some blanks in the puzzle. For example, many people with CAD don't have high blood cholesterol levels.

Not everything, however, is crystal clear. One study conducted at the Harvard Medical School did *not* find that elevated homocysteine levels increased the risk of arterial narrowing, but the subjects in the study were well-nourished men (not deficient in B vitamins), and the researchers called for further investigation.

What you need to know now

You may be wondering where you can have your homocysteine level measured. The current blood test is complicated and expensive (up to \$170) and has to be sent to a special lab. If you fall into some special category-for example, if you've had a heart attack-you and your doctor might consider a homocysteine test. *One problem with the test is that there's no clear definition of normal or desirable levels. Another problem: It remains to be proven that lowering high homocysteine levels will actually reduce the risk of heart attack and stroke (except in those with homocystinuria). Until we know more, there really is no point in getting tested.*

But what you can do, without getting any test and without hesitation, is to increase your consumption of B vitamins. Even very small amounts will keep homocysteine levels down. If you eat well, you can get all these vitamins from food. Folacin and B6 present few problems: they are plentiful in leafy greens, whole grains, some fruits, and fortified breakfast cereals. By next year white flour, breads, pasta, grits, white rice, and cornmeal will all be fortified with folacin. Though the RDA is only 180 to 200 micrograms (mcg) daily, 400 is a better target, especially for women of child-bearing age, and it can't hurt to get up to 650 micrograms a day. Vitamin B12 does present some concerns: it is found chiefly in meats, organ meats, eggs, and other foods that tend to be high in cholesterol and saturated fat (definitely not good for the arteries). But fortified soy foods, fish, lean meats, and milk do supply vitamin B12. The chart below

will guide you.

If you don't eat at least five fruits and vegetables a day, as well as fortified cereals and small servings of lean meat, poultry, or fish, do consider taking a daily multivitamin supplement supplying 100% of the RDA of these B vitamins.

Folic Acid

ADULT RDA: 180 mcg women, 200 mcg men, but premenopausal women need at least 400 mcg.

SOURCES: Leafy greens, broccoli, wheat germ, beans, whole grains, fortified oatmeal. 1 cup cooked spinach has 260 mcg; 1 cup beans, 160 to 350 mcg. (Though citrus fruits and juices, particularly orange juice, contain lots of folacin, this form is not well absorbed by the body.)

Vitamin B6

ADULT RDA: 1.6 mg women, 2 mg men

SOURCES: Whole grains, bananas, potatoes, beans, fish, meat, poultry. 1 banana or potato has 0.7 mg.

Vitamin B12

ADULT RDA: 2 mcg

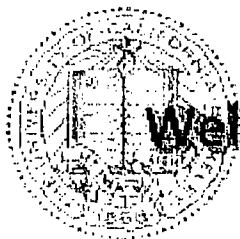
SOURCES: Meat, poultry, liver, eggs, dairy products, fish, fortified cereals and soy products. 1 cup milk has 0.9 mcg; 3 oz beef, 2 mcg.

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Garlic Pills

Claims, Benefits: Lower blood pressure and blood cholesterol, prevent stomach cancer, etc.

Bottom Line: There is no clear evidence that garlic pills are beneficial. No one knows what element in garlic is beneficial, if any. But eat all the garlic you like—it can't hurt, and might help.

Full Article, Wellness Letter, September 1998:

Cholesterol 2, Garlic 0

Garlic supplements remain very popular, and modern science has taken the curative potential of garlic seriously. There have been hundreds of garlic studies in the past decade alone. But as we've previously reported, the results of this research have been inconsistent and hard to compare. Moreover, most of the studies have been seriously flawed. Probably the No.1 claim made for garlic is that it lowers blood cholesterol. Not so, according to two well-designed studies published in June.

One study, appearing in *Archives of Internal Medicine*, used a popular garlic powder tablet (Kwai); the other, in the *Journal of the American Medical Association*, used a garlic-oil preparation. Both involved people with elevated cholesterol levels, were placebo-controlled, and lasted 12 weeks. Neither found any effect on blood cholesterol.

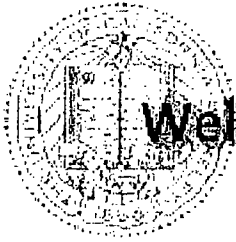
In spite of heated claims, plus a deluge of advertising, wishful thinking, and misinformation, there's no clear evidence that garlic supplements have any health benefits. Of course, garlic can't hurt you, either. We suggest that you use garlic not as medicine, but to enhance the flavor of other foods—if you like it, that is.

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And by the way: There are large differences in chemical composition among various garlic supplements. Interestingly, these two studies used two entirely different types of garlic supplement, yet neither had any effect.

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GBL

Claims, Benefits: Improves sleep, builds muscle, boosts physical performance, enhances sex.

Bottom Line: Don't take it. Serious adverse effects, and even deaths, have been reported in people taking such product containing GBL or closely related substances.

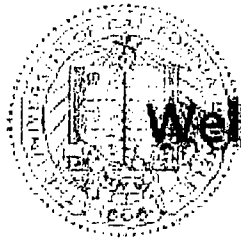
Full Article, Wellness Letter, July 1999:

Don't take any dietary supplement containing GBL (gamma butyrolactone) or closely related substances. This solvent is found in "dietary supplements" promoted to improve sleep, build muscle, boost physical performance, and enhance sex. The products, in liquid or powder form, are sold in health-food stores, via the Internet, and in some gyms. GBL is converted into a very potent drug (called GHB) in the body. At least 120 cases of serious adverse effects (including seizures and coma) and three deaths have been reported in people taking such products. The FDA has asked manufacturers to recall them, or it will take action, since these are illegally marketed, unapproved drugs. Look out for these ingredients on the label: gamma butyrolactone, tetramethylene glycol, 2(3H)-Furanone di-hydro, or 1,4 butanediol.

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Wellness Guide to Dietary Supplements

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Gero Vita

Claims, Benefits: Prevents aging and senility, cures arthritis, heart disease, depression, diabetes, and many other ills.

Bottom Line: This is a quack product that won't prevent or cure anything. It has been around for years, is currently being aggressively marketed to older people, many of whom fall for it and waste their money.

Full Article, Wellness Letter, March 1999:

Ask the Experts

Q: Does Gero Vita really help prevent aging and senility? I got a brochure for it in the mail.

A: It won't prevent or cure anything. Gero Vita, also called GH3, has been around for years—it's one of those crazy ideas that never die. Many readers have questioned us about the new brochure. It focuses on fears of senility, and actually claims that "age spots" on the skin are the first sign of impending memory loss, which is baloney. Previous ads were even more sweeping: "Famous Romanian Anti-Aging formula will make you younger overnight." Ads also claim that Gero Vita or GH3 is a new vitamin or a drug that can cure arthritis, heart disease, depression, diabetes, and many other ills.

Gero Vita is supposedly a derivative of procaine (trade name Novocain), the local anesthetic used by dentists. The ads say that Gero Vita was created at the Geriatric Institute of Romania. There actually is such an institute in Bucharest, where starting in the 1940s Dr. Anna Aslan experimented with procaine injections as an anti-aging drug. However, no one has been able to replicate her experiments. Studies have never shown that procaine—or Gero Vita—is of any use in combatting the effects of aging.

Moreover, though the current makers of Gero Vita claim that it's a derivative of procaine in pill form, that is wrong. Actually the pill contains only one of the components that procaine breaks down into in the body: PABA (a sunscreen and also a constituent of some foods), which is excreted from the body. It also contains a synthetic mood-altering substance, as well as an amino acid and a hodgepodge of vitamins and minerals.

Gero Vita is sold as a "nutritional supplement" (\$30 for a month's supply). The FDA

and Postal Service have periodically pursued it, and they should renew the chase. In theory, marketers cannot make explicit health claims for such stuff, but that doesn't stop them in the current free-for-all market.

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Last words: This is an excellent example of how the FDA is unable to protect us from quack products.

UC Berkeley Wellness Letter, March 1999

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Ginger

Claims, Benefits: Relieves motion sickness.

Bottom Line: It is worth trying, even though the scientific evidence behind it is inadequate, and the results of studies have been conflicting.

Full Article, Wellness Letter, June 1999:

Motion sickness remedies—ginger to scopolamine

The only thing worse than being carsick may be driving a car with one or more passengers turning green. Motion sickness can spoil a trip or vacation. The common symptoms are feelings of malaise, nausea, and vomiting. It can happen in cars, in airplanes, on rides in an amusement park, or at sea. Once you begin to feel ill, there's not a lot you can do for relief, apart from getting to solid ground.

What causes motion sickness is mixed signals to the brain—a discrepancy between what the eyes see and what the body senses. Your inner ear senses unusual motion (the rolling of a ship or air turbulence during flight) and signals your brain that you're off-balance. If you've lost visual contact with a stable horizon, you may feel ill. Fear and anxiety contribute to the malaise.

Home remedies, herbal remedies, and over-the-counter drugstore remedies for motion sickness abound:

By prescription only: Scopolamine (Transderm Scop), administered via a patch behind the ear, prevents motion sickness and is the treatment of choice. It can have such side effects as dry mouth, blurry vision, and drowsiness. The FDA pulled it from the market at one point because of a bad batch, but it's back now. It is not recommended for children.

Over-the-counter drugs: Antihistamines such as Dramamine and Benadryl can help prevent motion sickness (some generic names are cyclizine, meclizine, and dimenhydrinate). They may produce the same side effects as scopolamine.

Home remedies: None have been proven effective. Ginger is the most famous. The U.S. Pharmacopeia has standardized dosages of ginger, but says "a general recommendation for its use... cannot be supported... due to the lack of adequate scientific evidence and conflicting study results." You can buy ginger capsules, or eat

ginger snaps or candied ginger. Ginger ale is okay, too, though it has very little ginger in it. Peppermint is also popular—and pleasant. Large doses of raw ginger or peppermint oil can irritate the stomach lining as well as the mouth.

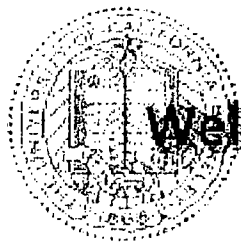
Ways to head off motion sickness: At sea, stay topside and amidships. In a car or ship, look at the horizon or other fixed distant point. The front seat is the best place for anybody prone to motion sickness. Don't read in a car; keep your head up. Eat light meals before and during travel, and avoid alcohol. In a plane, try to relax, and aim the air vent at your face. Book a seat over the wings, if you have any choice. In any conveyance, get fresh air if possible, which can help head off nausea. If you're in a car, ask the driver to avoid quick turns and high speeds—a good idea even if nobody is feeling sick. Drivers are less likely to get motion sickness than passengers.

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Ginseng



Claims, Benefits: Boosts energy and athletic performance; treats or cures a wide range of disorders, from the common cold to HIV infection and Alzheimer's disease.

Bottom Line: Scientists are still largely in the dark about its medicinal benefits. As of yet, there's no consistent evidence to support the use of ginseng. It contains many active ingredients, and it's hard to know which of these elements are important. And what's actually in any product labeled ginseng can vary greatly—some products contain no ginseng at all.

Full Article, Wellness Letter, July 2000:

The herb with a thousand faces

Ginseng (species *Panax*) has been used medicinally for thousands of years. People take it as a pepper-upper and to cure a wide range of ills. In this country alone its sales run into hundreds of millions of dollars annually. One well-known website advertises ginseng to treat 12 different ailments, from the common cold to HIV infection and Alzheimer's disease. Fruit shake bars all over the country will add ginseng to your smoothie. Deli refrigerators are full of ginseng-enriched teas and other soft drinks. Kids too young to buy beer can purchase ginseng elixirs laced with alcohol at convenience stores.

Thousands of books and papers on ginseng have been published—way too many, according to Dr. Varro Tyler, the leading American expert on herbs and plant-based medicine. Scientists are still largely in the dark about the medicinal benefits of ginseng. But at least its chemical properties have been studied thoroughly. The plant's active ingredients are called ginsenosides (among other terms), and 13 different types are known. But like most plants, ginseng contains many other compounds, too—volatile oils, sugar, fats, B vitamins, minerals, plant hormones, and a range of other active substances. It's not so simple to figure out which of these elements are the important ones.

Where it comes from

What's actually in any product labeled ginseng depends on at least two things: first, what part of the plant it came from—leaves, roots, or stems, all of which have different

chemical compounds. Second, there are at least three types of ginseng with different biological properties. American ginseng (*Panax quinquefolius*) is on the endangered species list here, so intensively has it been cultivated and harvested as a cash crop. Korean or Asian ginseng (*Panax ginseng*) is grown all over Asia and also has other names. Siberian ginseng (*Eleutherococcus senticosus*) contains still other chemicals and is not regarded as a true ginseng. And there are other kinds, too. In addition, ginseng comes in two general types, red and white, depending on how it was processed.

Since most studies have been of poor quality, we still don't know if ginseng works or how to use it. "Most of the literature in this area," Dr. Tyler says, "is based more on superstition and subjective opinion than on objective, scientific evidence." Various researchers have claimed that ginseng boosts energy and athletic performance; that it prevents or reduces the risk of all kinds of cancer; that it fights emotional stress, enhances memory, boosts immunity, reduces blood sugar in diabetics, and promotes sexual potency and desire. It's often referred to as an "adaptogen," with claims that it promotes health, energy, and a sense of well-being, like the tonics of yore. But this is a meaningless term.

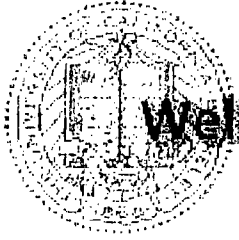
Quality control vs. out-of-control

The few well-designed studies on the subject have not borne out claims that ginseng boosts athletic performance or energy. (You won't find this out from manufacturers' websites or catalogues.) Among other research, a well-designed study of 36 healthy men, published in the *Journal of the American Dietetic Association* in 1997, found that ginseng did not improve physical performance. There's preliminary evidence suggesting that the plant may help diabetics, but studies with purified extracts of ginseng have not found a benefit for them. Which brings up another problem: obtaining authentic ginseng in standardized doses is difficult, and many studies do not specify what they used. The best grades of ginseng are very expensive. And the herb is easily contaminated with other plant substances that may affect the outcome of trials.

That's also the problem with ginseng in the marketplace: a complete lack of quality control. You may pay for ginseng and not get any. Dr. Tyler has reported that of 54 commercial ginseng products analyzed by independent researchers, 60% contained little ginseng, and 25% had none at all. Other studies have found that commercial ginseng products vary widely in the specific ginsenosides they contain, and some have none. As reported in the *Lancet* in 1994, one so-called ginseng product, sold by National Health Products in this country, actually contained ephedrine instead of ginseng. The Swedish athlete who used it ended up testing positive for "doping."

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A modest proposal: There's no consistent evidence to support the use of ginseng. A recent thorough review in the *European Journal of Clinical Pharmacology* came to this conclusion, and called for more rigorous investigations with real, standardized ginseng. Dr. Tyler proposes that the supplements makers and the various governments that make so much money out of selling, growing, importing, and exporting ginseng should turn back some of their profits toward this objective. But in the marketplace as it currently exists, they have little motivation to do so.



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Ginkgo Biloba

Claims, Benefits: Improves blood flow and circulatory disorders; prevents or cures absentmindedness, memory loss, and dementia; treats eye disease and tinnitus.

Bottom Line: Ginkgo is prescribed in Germany and France for circulatory disorders; it shows promise against claudication (leg pain due to obstructed blood flow). Research suggests it offers limited benefits for people with mild to moderate Alzheimer's disease. But there's no evidence that it is a "brain booster" for healthy people. Other claims are unproven.

Full Article, Wellness Letter, January 1998:

Is ginkgo biloba a memory booster?

This is the scenario, pretty familiar by now: a desperate health problem exists, and a tiny bit of new information appears. This is followed by a lot of media commotion and a coup for enterprising manufacturers of "nutritional supplements." In October a study of ginkgo biloba—an ancient Chinese herbal medicine widely available here in pill form—as a possible treatment for Alzheimer's disease was published in the *Journal of the American Medical Association (JAMA)*. Ginkgo biloba appeared to help some patients to a limited extent. A cautionary statement from the Alzheimer's Association was all but drowned out. The ensuing fuss centered largely on whether taking the herb could help people remember, for instance, where they put the car keys: "I've really gotten crisp," burred one ginkgo biloba user in *Newsweek*.

Ginkgo biloba is made from the leaves of the hardy ginkgo tree, a native of China that now grows everywhere, particularly in cities. Like all plant extracts, ginkgo biloba is full of chemicals—such as flavonoids and terpenoids, some apparently unique and as yet poorly understood. Some are antioxidants, though that does not necessarily mean they prevent disease. The term "antioxidant," particularly as used in ads for supplements, has taken on the meaning of "miracle-worker," but this is seldom the case. Ginkgo biloba bears an incidental resemblance to aspirin, in that it can keep blood clots from forming and may increase blood flow.

Where it shows promise

This herb has been prescribed in France and Germany for years against vascular disease (circulation disorders) and "cerebral insufficiencies," which can mean anything from

absent-mindedness and confusion to dementia. Though it has been studied in Europe, most of the studies have been small, poorly designed, or otherwise flawed. Many questions remain unanswered—how effective ginkgo biloba is against one disorder or another, how long it should be used, what the proper dosage is. German and French doctors have never claimed miraculous powers for it.

It does show promise for some circulatory disorders, such as intermittent claudication (pain in the legs due to obstructed blood flow, which is usually caused by atherosclerosis) and possibly for improving memory in older people with mild dementia. No serious side effects have been reported, except for two cases of bleeding after long-term use. But it's logical that ginkgo biloba might well interact with other medications, such as aspirin.

The *JAMA* study was in reality not all that exciting. It was a yearlong trial of an extract of ginkgo biloba that began with more than 300 patients. All had been diagnosed with mild to moderate dementia—80% met the criteria for Alzheimer's. The dropout rate was high: only 137 of these people made it to the end. Some did not follow the treatment or thought it wasn't working, some were removed by their caregivers, and a few died. Improvements in mental function and behavior among those taking ginkgo biloba were small and of limited duration. About a third actually got worse. Zaven Khachaturian, director of the Ronald and Nancy Reagan Alzheimer's Research Institute, called the study encouraging but cautioned against false hopes. He pointed out another problem: "Commercially available ginkgo products may not contain the same preparation of herbs as was used in this study, so there is no way to predict the effects, positive or negative."

Interestingly, tacrine, a not-very-successful prescription drug for Alzheimer's, has similar limited effects. It was approved by the FDA not because it's a cure or even a very effective treatment, but because it might help a few people temporarily. Tacrine can have side effects and is also much more expensive than ginkgo biloba. But at least tacrine has been extensively studied and standardized.

Ginkgo biloba undaunted

There was no indication at all in the *JAMA* study that ginkgo biloba could be a "brain booster" for healthy people not suffering from dementia. That hardly slowed down the Pharmanex Company and other purveyors of ginkgo biloba, who did not need a study in the first place. Their products, unregulated and untested, are already everywhere, aimed not at Alzheimer's patients but at the general public. Here are a few of the claims: "sharpens mental focus, improves memory and concentration, promotes circulation to the brain, maintains vigor and well-being, helps prevent free radical cell damage in the brain." The package insert in Bio Ginkgo says you need to take the pills for 12 weeks to notice an effect. At two tablets a day, and \$11 for 40 tablets, you'd have to spend \$45—enough to ensure a nice profit margin for the company whether your memory improves or not.

But do remember this:

- If you're caring for an Alzheimer's patient, don't experiment with

any kind of medication, herbal or otherwise, without professional advice.

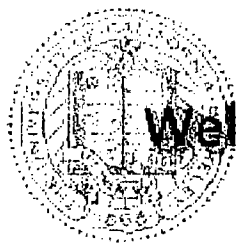
- If you're thinking of "crisping" your own mental powers, nobody knows whether ginkgo biloba would help or not, or even whether there's any ginkgo biloba in what's on the market.
- Boost your brain by reading a book, doing memory exercises, getting into an interesting conversation, learning a new skill or reviving an old one, or just doing crossword puzzles.
- So-called "brain boosters" are unlikely to smarten you up.

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Glucosamine

Claims, Benefits: Halts, reverses, or cures arthritis.

Bottom Line: Taken with chondroitin sulfate, this is a popular "cure" for osteoarthritis. Some short studies have shown that glucosamine relieves the pain and stiffness of osteoarthritis as effectively as aspirin. But studies have yet to show that it is safe and effective in the long term. If you want to try it, let your doctor know, particularly if you are diabetic. Side effects have been reported.

Full Article, Wellness Letter, December 1999:

What about the arthritis "cure"?

Will glucosamine and chondroitin sulfate supplements cure or relieve arthritis? This may still be the most frequent query we get from readers, second only to questions about vitamin E. A best-selling book claims that glucosamine and chondroitin sulfate cure osteoarthritis, the joint disease that commonly affects older people. There's an avalanche of other hype about them in the market place, too. People in chronic pain can hardly be blamed for trying anything that comes along.

Our first report on glucosamine and chondroitin sulfate, in 1997, concluded that nobody knew much about these supplements but that—as an adjunct to proven treatments—they might help reduce pain and would probably do no harm. One problem is that you don't really know how much glucosamine and chondroitin sulfate are in the bottles. This is a hit-or-miss proposition, since there's no standardization, and no guarantee that you're getting what the labels say.

Both glucosamine and chondroitin sulfate occur in the body and are vital to cartilage formation. It's the wearing down of cartilage that causes pain, and it's easy for advertisers to convince people that swallowing these substances could help. But there's no evidence that the chondroitin you swallow is absorbed. Though nothing is known for sure yet, studies are underway. The Arthritis Foundation has called for further study, as has the American Academy of Orthopedic Surgeons. The National Institutes for Health may soon be undertaking a long-term study that will answer the outstanding questions.

Here's the latest news, plus a few facts to keep in mind:

- A few lab studies have shown that glucosamine stimulates the growth of cartilage and/or keeps it from degrading.
- Some studies have shown that glucosamine relieves the pain and stiffness of osteoarthritis as effectively as aspirin or ibuprofen. Most of the studies used 500 milligrams of glucosamine three times a day. But the studies were short, and many had flaws (for example, osteoarthritis was not always properly diagnosed). It takes about four weeks for the supplement's effects to be felt.
- Though glucosamine and chondroitin sulfate are marketed as "natural," the term is meaningless. The compounds are highly processed-extracted from crustacean shells and other animal by-products.
- A recent article in The Lancet points out that glucosamine, even in very low doses, can have adverse effects on blood sugar levels, possibly increasing insulin resistance. Many people with osteoarthritis are older and overweight, and have diabetes or are at risk for it. It's not known that the supplements actually harm diabetics or bring on diabetes, but they might.

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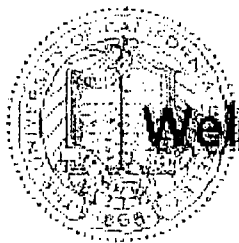
Last words: No studies have yet shown that glucosamine and chondroitin sulfate are safe and effective in the long term. If you want to try them, let your physician know, particularly if you are diabetic. Side effects have been reported, including headaches, nausea, leg pain, itching, and drowsiness. Pregnant women should avoid these supplements.

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Goldenseal

Claims, Benefits: Treats diarrhea and colds, has antiseptic action.

Bottom Line: This herb may be effective against diarrhea, but it is unpredictable and has potential side effects. The product you buy may have little or none of the active ingredients, or a huge dose.

Full Article, Wellness Letter, October 1999:

Goldenseal: flower power

Goldenseal, a perennial with a yellow flower related to the buttercup, is one of the oldest herbal medicines. As is not always the case with such traditional remedies, its active ingredients have been identified—hydrastine and berberine. The latter is known to have effects against diarrhea. While the pharmacology of the plant is understood, few clinical studies have been done. Goldenseal is also known as a cold remedy and a weak antiseptic, traditionally used as a wash to ease minor irritations of the mouth, lips, and eyes, though there's no scientific evidence for this.

Varro Tyler, the American herb expert, calls goldenseal a "drug" and notes that it was a favorite remedy of the Cherokees, which then passed into wide use in patent medicines, such as "Dr. Pierce's Golden Medical Discovery." Folk herbalists in Indiana, he says, continue to recommend it as a remedy for cracked lips and canker sores. As reported recently in the *Archives of Family Medicine*, two small clinical trials have shown berberine to be effective against diarrhea caused by such infections as *E. coli*, vibrio, and giardia. But there are drugs that work as well—and doctors don't often recommend goldenseal because of its unpredictable action and potential side effects.

According to the recent reference book *Herbal Medicines*, by a trio of British herb experts, "excessive use of goldenseal should be avoided." This is because potential side effects include stomach upset, nervous symptoms, depression, and (in large enough quantities) even death from respiratory failure. Pregnant and nursing women should avoid it; so should children, as well as anyone with elevated blood pressure, heart disease, epilepsy, or blood clotting problems.

We would caution against any use of goldenseal, since it is impossible in this country to get products with standardized doses. The product you buy may have little or no berberine or hydrastine—or a huge dose.

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Two further thoughts: Goldenseal has been promoted in health-food stores to "flush out" such drugs as marijuana, cocaine, and heroin and thus prevent their detection in a urine test. Fortunately or unfortunately, this is wishful thinking. And the rush to harvest goldenseal in this country has put the species on the endangered list. Maybe we'd be better off to just let it alone.

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Grape Seed Extract

Claims, Benefits: Treats everything from cancer, arthritis, and diabetes to varicose veins and macular degeneration.

Bottom Line: There's no evidence that it is effective against any of these disorders. It does, however, contain interesting flavonoids, which are being seriously studied and may have a bright future. Meanwhile, consume flavonoid-rich foods instead.

Full Article, Wellness Letter, June 1999:

Ask the Experts

Q: What's in grape seed extract? And what is it good for?

A: Marketers of this dietary supplement claim that it alleviates a host of problems and diseases, from cancer, arthritis, and diabetes to varicose veins and macular degeneration. There's no evidence it is effective against any of these disorders. It does, however, contain interesting compounds, which are being seriously studied and may have a bright future as more knowledge emerges.

What's special about grape seed extract is its high level of certain flavonoids, notably proanthocyanidins, also called procyanidins. (For more on flavonoids and other phytochemicals, see our April 1999 issue.) These compounds are also found in green tea, red wine, and pine bark (the last is marketed as pycnogenol).

Test tube and animal studies have found that the special flavonoids in grape seed extract are potent antioxidants. There's very preliminary evidence that these compounds may help maintain connective tissue (as in tendons, ligaments, and cartilage) and affect vascular disorders.

However, scientists still understand little about the exact effects of these (and other) plant chemicals in the human body. They don't know which grape species should be used or what doses taken. We cannot recommend that you take grape seed extract at this point. We can wholeheartedly recommend that you eat grapes, berries, and other fruits and vegetables rich in flavonoids and other phytochemicals. And drink tea, wine (in moderation), and grape juice, if you like them.

UC Berkeley Wellness Letter, June 1999



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Guggulipid

Claims, Benefits: Lowers blood cholesterol; also used for other disorders in India.



Bottom Line: Guggulipid has had some promising results in lowering blood cholesterol. If you try it, talk to your doctor about it and your other options.

Full Article, Wellness Letter, September 2000:

Q: Will the supplement called guggulipid help reduce blood cholesterol levels?

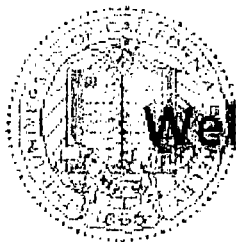
A: In fact, there's some evidence it does—but read on before you try it. Guggul is a gummy resin that oozes from a tree (*Commiphora mukul*) that grows in India. Used for centuries as a treatment for obesity, gout, and other disorders, an extract called guggulipid is now approved as a cholesterol-lowering drug in India. One good study conducted in India in 1994 showed that daily doses of 100 milligrams of guggulipid effectively reduced LDL ("bad") cholesterol and triglycerides. A clinical trial is underway at the University of Pennsylvania.

One component of guggulipid is guggulsterones, probably the active ingredient for lowering blood cholesterol. Similar plant extracts are known to have an effect on blood cholesterol—for example, the pine extracts in Benecol and the soy extracts in Take Control, two margarines allowed to make cholesterol-lowering claims.

If your cholesterol is high, you need medical advice and monitoring in order to lower it. The first line of defense is a diet low in saturated fat, plus regular exercise, and weight loss if necessary. Talk with your doctor about whether you also need medication. The recommended treatment at present is one of the "statin" drugs. If you want to try guggulipid, be sure your physician knows about it and monitors its effects. As with most supplements in this country, you'll have no guarantee that what you buy is standardized—thus dosage is difficult to determine.

Pregnant women and people with thyroid disorders, as well as those on medications such as calcium channel blockers, should not take guggulipid, nor should women with menstrual problems. Possible side effects include excessive menstrual bleeding. Digestive disorders, such as nausea, vomiting, and diarrhea, have also been reported.

Full Article, Wellness Letter, September 2000



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Hawthorn

Claims, Benefits: Treats heart disease.

Bottom Line: This may, one day, turn out to be a powerful treatment for heart disease, but more research is needed. If you have heart symptoms, don't try to diagnose yourself and don't self-medicate with hawthorn. Get medical advice immediately.

Full article, Wellness Letter, July 1999:

Herb for the heart?

It's no secret that some herbs have powerful effects on the heart. Digitalis, derived from the dried leaves of the purple foxglove (a common garden perennial), is a standard prescription drug now. Another potentially important herb for treating heart disease is hawthorn (*Crataegus oxycantha* and other species), the white-flowering shrub beloved of many writers—"the darling buds of May" shaken by "rough winds" in one of Shakespeare's sonnets.

Hawthorn has been used to treat heart failure since ancient times. It's now known to contain compounds known as flavonoids, capable of increasing blood flow in the heart, boosting contractions in the heart, and lowering the risk of unstable heart rhythms. Some studies in lab animals have found that this herb reduces blood pressure; small studies with humans suggest that it wards off angina (severe chest pains caused by insufficient coronary blood supply).

But however powerful it may prove to be, don't take hawthorn on your own.

Herbal medicines exist in limbo in this country—there's no such thing as a standardized dose, and what you buy over the counter may or may not contain what the package claims. Commission E—the German agency that evaluates the safety and efficacy of herbs, based on scientific knowledge, if any, and traditional use—recognizes hawthorn as a potential drug for heart failure, but only the flower combined with the leaves, not the berry, flowers, or leaves alone. One complication in herbal medicine, by the way, is that different plant parts contain different chemicals and have different effects.

Dr. Varro Tyler, who studies herbs and plant therapies in this country, also counsels against diagnosing your own symptoms and just giving hawthorn a try. Good, large-scale clinical studies of hawthorn's effects on cardiac symptoms need to be conducted. In the meantime, as Dr. Tyler adds, self-diagnosis of heart symptoms is "a

very dangerous practice." And for this reason "self-treatment with hawthorn is neither advocated nor condoned."

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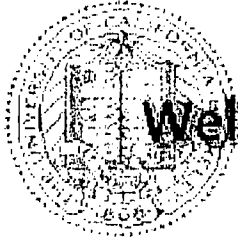
Final thoughts: If you are short of breath, have chest pain or circulation problems, or know or suspect that your blood pressure is elevated, don't simply go to the drugstore or health-food store. Don't self-prescribe or self-medicate. Get medical advice immediately. There are many effective treatments for heart disease. One day hawthorn may even be among them.

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Herbal (Diet) Teas

Claims, Benefits: Cause weight loss.

Bottom Line: Avoid "diet" teas. These usually contain harsh laxative herbs such as senna, aloe, cascara, rhubarb root, frangula, or buckthorn, which cause diarrhea and dehydration and thus lead to temporary weight loss. These products, which in California must bear a warning label, can cause abdominal pain, muscle weakness, and severe diarrhea. Between 1992 and 1994, at least four healthy young women died after drinking senna-containing teas for months. No tea can permanently take pounds off.

Full Article, Wellness Letter, September 1997:

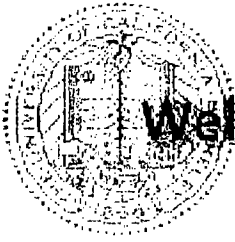
Herbal tease

The herbal teas commonly sold as beverages in supermarkets, grocery stores, and restaurants are probably harmless. Chamomile, rose hip, ginger, orange peel, jasmine, hibiscus, lemon grass, peppermint, cinnamon, and other fruit-flavored or spiced teas are safe and without known side effects—or curative powers. But read the label. Avoid "diet" teas. Those containing harsh laxative herbs such as senna, aloe, cascara, and buckthorn can cause severe diarrhea and dehydration—leading to temporary weight loss. These products can have uncomfortable side effects and have been linked to some deaths.

You might also think twice about such products as "Ginkgo Sharp," for example, from Celestial Seasonings. This tea contains no ingredients that we know to be harmful. But the package copy skates on thin ice. The tea is said to "maintain oxygen flow to the brain." On the other side of the box, you'll find a little essay about improving memory. Is this a health claim or not? One Celestial Seasonings product that tries to ride the diet-tea wave is "Diet Partner," billed as "refreshment for a low-fat lifestyle." It contains no laxatives. But it does have certain vitamins and minerals that it claims "support your body's natural ability to burn calories efficiently by making fat and blood sugar available to burn for fuel." This is nonsense, and it veers close to implying weight loss will result from drinking the tea.

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Human Growth Hormone

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Claims, Benefits: Will slow or reverse the aging process, boost muscle strength, renew energy, and keep you healthy.

Bottom Line: There's no evidence for this. And there's no way of knowing what's in the supplements on the market or what they'll do in your body.

Full article, Wellness Letter, February 2001:

Wellness Made Easy

Beware of claims that human growth hormone or related products will help keep you young.

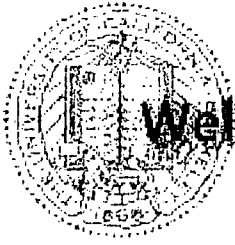
Though the level of this hormone tapers off as we age, there's no evidence that replacing it will slow or reverse the aging process, boost muscle strength, renew energy, or keep you healthy in any way, as its proponents claim. (There are FDA-approved medical uses for growth hormone in children or adults with deficiencies, usually from genetic causes, tumors, or damage to the pituitary gland, but that's a different matter.) Real growth hormone, a prescription drug that is injected, is very expensive. It can have severe side effects, including increased risk of certain cancers and diabetes. Health-food stores and websites offer "growth hormone" products—"precursors" that are supposedly converted into the hormone, and "releasers" that are supposed to stimulate production of the hormone. You have no way of knowing what's in these supplements or what they'll do in your body, since they are unregulated. Avoid them.

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Memory and Brain Supplements

Claims, Benefits: Boosts the immune system, provides antioxidants, contains all the nutrients in seven to ten fruits and vegetables.

Bottom Line: No capsules can substitute for fruits and vegetables, which contain the best balance of nutrients and phytochemicals.

Full article, Wellness Letter, November 2000:

Juice Plus—and Minus

Would you rather eat an orange or swallow a dried-orange capsule? Find your thrill in a blueberry pill, or in actual blue-berries? Lots of supplements on the market claim to offer the benefits of whole fruits and vegetables. One of the most prominent of these products is Juice Plus+, which comes as "Orchard Blend" capsules, made by freeze-drying seven fruits, and "Garden Blend" capsules, made from ten vegetables (you are supposed to take both of them). They also make a gummy candy for kids that presumably takes the place of all those vegetables kids dislike. National Safety Associates (NSA) and Natural Alternatives International (NAI)—which almost sound like government agencies—make Juice Plus+ and sell it via a multi-level marketing program.

Among the claims:

- These products contain beneficial "live enzymes." But what could this mean? Enzymes are the proteins produced by living cells to promote essential chemical reactions. When you swallow enzymes, they are digested like any other proteins.
- These products boost the immune system. This is a meaningless statement—and the studies on the Juice Plus+ website in support of the claim are not good ones. Small increases in immune function do not mean you're less likely to get sick. (Boosting immunity is not that simple—watch for our upcoming article on this subject.) In any case, if a capsule containing dried fruit boosts your immunity, imagine what fresh fruit could do.
- These products provide antioxidant benefits. The capsules no doubt offer vitamin C and carotenoids, since they are made from fruits and

vegetables. But the real stuff offers even more. It's hard to make comparisons, however. Juice Plus+ capsules have no nutritional labels—you cannot tell how much vitamin C, beta carotene, fiber, etc., they actually contain.

No matter how compressed these capsules are, or what they contain, it's impossible to deliver the nutrients of five to ten servings of fruits and vegetables in several capsules weighing 800 to 850 milligrams (about one-thirtieth of an ounce) each. It would take two dozen 800-milligram capsules just to provide all the nutrients in six ounces of carrot juice.

Juice Plus+ relies heavily on anecdotes. One big endorser used to be O.J. Simpson, who testified in a tape for the company that the capsules cured his arthritis. But at his trial he claimed that his arthritis had made it impossible for him to have committed a double murder, so Juice Plus+ stopped using the Simpson tape.

No capsule can substitute for fruits and vegetables, which contain the best balance of nutrients and phytochemicals. Your cells manufacture the enzymes. You don't need Juice Plus+.

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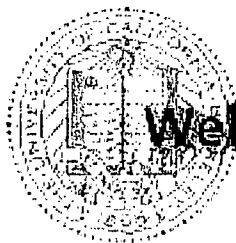
Final thought: If your children or grandchildren won't eat what's good for them, you might be tempted to give them pills or a serving of "nutritional" sweets. But is it wise to teach them that nutrition comes from capsules, let alone gummy candy? Most kids love fruit and soon learn to like vegetables, if good foods are consistently on the table and in the fridge.

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Kava

Claims, Benefits: Natural alternative to anti-anxiety drugs and sleeping pills.

Bottom Line: Though it is "natural," kava may not be safer, less intoxicating, or less potentially addicting than alcohol. There's no harm in drinking an occasional cup, but we cannot recommend it as medication, let alone as frequent recreation, especially not before driving.

Full Article, Wellness Letter, August 1998:

Hawaii high

If there were a best-seller list for herbs, the contender for top spot these days would be kava. It is a shrublike plant (*piper methysticum*, of the pepper family) from the South Pacific, used from Fiji to Samoa and other spots around the Pacific Rim. Beverages made from kava root are a time-honored adjunct to ceremonial life in Oceania. Europeans first encountered kava in Hawaii. But today there's no longer any need to boil roots and pass a cup from hand to hand. Kava can be purchased at your local health-food store or pharmacy. It comes in pill and capsule form and is now being heavily promoted as an anti-anxiety drug and relaxant.

It is also an intoxicant. In 1996 a Utah driver was picked up for driving under the influence of kava. He had had 16 cups of it, according to arresting officers. He was convicted of DWI, although his blood alcohol level was nil.

Naturally soothing?

At least three popular books now recommend kava as a "natural alternative to anti-anxiety drugs and sleeping pills." ("Natural" is supposed to mean beneficial and harmless when used in such pitches. Exactly what is "natural" about a capsule is hard to figure out.) Kava root contains fatlike compounds called kavalactones, which act as sedatives, muscle relaxants, and pain relievers. Scientific studies of kava as an anti-anxiety drug have been limited and inconclusive. The FDA recognizes kava as an intoxicating nonalcoholic product that may have abuse potential among children. Anyone can buy it.

Ten years ago an Australian study of kava drinking found such symptoms as rashes, weight loss, abnormal reflexes, and other bodily disturbances among aborigines who were heavy users. Kava also intensifies the effects of alcohol and tranquilizers. As with

many other herbs, there's no way of knowing how much of the active ingredients you're getting from a given product. The American Herbal Products Association (an industry group promoting herbs) recommends a maximum of 300 milligrams of kavalactones daily. But it's not clear what this recommendation is based on, or how to accurately calculate the number of milligrams of kavalactones in different pills or teas. What *is* clear is that doses at this level have very little effect until after six weeks or more, when the amount of kavalactones build up in the body.

Another interesting fact that goes unmentioned in kava promotions: in the early 1960s Riker Laboratories, a California pharmaceutical company, isolated kavalactones and used them in a clinical trial on young men. At doses of 500 milligrams daily, kavalactones proved to have a mildly tranquilizing effect, but the experiment had to be discontinued when the men developed skin lesions (much like the Australians described above.)

It would be hard to say that kava in any form is safer, less intoxicating, or less potentially addicting than alcohol, or that it has fewer side effects than prescription drugs. If you find yourself the official guest at a luau and want to be polite, there's no harm in drinking a cup. But we cannot recommend it as medication, let alone as recreation. If you are thinking of taking herbs of any kind for anxiety or depression, do seek medical advice first. If you try kava, don't combine it with alcohol, prescription tranquilizers, or other drugs. It may be risky to take kava and then drive. Children under 18 and pregnant or nursing women should not use it.

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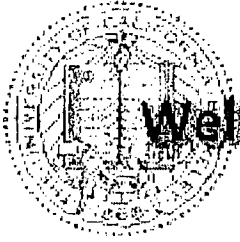
Parting thought: "Natural" does not necessarily mean "good for you." Some herbs are intoxicants, some are poisons, and some may actually do some good. What we need is more knowledge, not more hype.

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Lysine

Claims, Benefits: Prevents and relieves cold sores (herpes).

Bottom Line: Though the studies have been inconclusive so far, this amino acid may help head off recurrences of cold sores. Don't take lysine pills daily over long periods, but only when you feel cold sores coming on. For a severe initial outbreak, take one of the prescription drugs, if you can afford it.

Full Article, Wellness Letter, December 1995:

Lysine and cold sores

The herpes virus, an ancient and unwelcome human companion, comes in more than one form. Herpes simplex 1 is almost always the culprit in cold sores or fever blisters that erupt around the mouth; herpes simplex 2 is generally responsible for genital herpes. But, in fact, both forms of the virus can cause eruptions on the genitals and around the mouth. Herpes outbreaks, wherever they occur, are usually painful and unsightly, as well as contagious. Anywhere from 60 to 90% of us carry herpes simplex 1, probably as a result of childhood infection, and genital herpes is one of the most common sexually transmitted diseases these days. (Perhaps 20 million people have genital herpes, and one million become infected each year.) Once you have the virus, you have it. It may lie dormant, but it doesn't go away.

Fortunately, there's now an effective prescription drug for herpes called acyclovir. Sold in capsule, liquid, or ointment form, it does not cure herpes in the sense that antibiotics cure bacterial infections, but it does reduce the severity of outbreaks and seems to have few if any serious side effects. And there's some evidence that long-term daily oral doses can cut down on recurrences. It's also effective against herpes zoster, the chickenpox/shingles virus. (Two similar drugs, one already approved for use against shingles, are soon to be marketed for herpes.) However, acyclovir is quite expensive and there's no generic yet, and many people wonder if there aren't other measures they can take.

About a decade ago, before acyclovir, the amino acid lysine was regarded as a potential herpes treatment. Lysine, one of the building blocks of protein, is supplied by many foods (notably red meats, fish, and dairy products). You can certainly satisfy your needs for lysine from dietary sources. But to fight herpes, you probably need more, the theory ran.

The idea that lysine might work against herpes has some plausibility. In order to replicate, the herpes virus requires arginine, another amino acid that's common in foods and necessary to human life; but lysine is thought to interfere with the absorption of arginine in the intestine. It's a long way from this observation to a herpes cure, and most studies have been inconclusive. A small study conducted at the Baylor College of Dentistry in 1984 did show that lysine supplements-1,000 milligrams a day-helped reduce recurrences of cold sores. (Genital herpes was not part of this study.)

Lysine supplements-worth a try?

For a severe initial outbreak, take acyclovir. Though the evidence is far from strong, lysine supplements might help head off recurrences of cold sores. One caution: no one is sure what the risks are of taking lysine pills daily over long periods. Don't take them continually, but only when you feel cold sores coming on.

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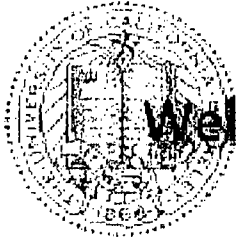
Tip for heading off cold sores: sunlight seems to activate herpes simplex 1 in some people. So a sunscreen, applied to the lips daily, can be useful.

UC Berkeley Wellness Letter, December 1995

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Melatonin

Claims, Benefits: Promotes sleep, counters jet lag, improves sex life, slows aging, etc.



Bottom Line: This human hormone may help promote sleep, but the evidence is still not definite. The other claims are unproven. No serious side effects have been reported, but long-term effects are unknown. Hormones are powerful substances and can produce unexpected results, so we don't recommend melatonin.

Full Article, Wellness Letter, May 2000:

Melatonin: Questions, Facts, Mysteries

Look on any website selling supplements or in any health-food catalogue, and you'll find melatonin recommended for insomnia, jet lag, arthritis, stress, alcoholism, migraine, and the signs and symptoms of aging and menopause—along with assertions that it staves off heart disease and cancer. Some people recommend "melatonin replacement therapy" for all postmenopausal women. But now that scientific research is catching up with melatonin mania, you may want to proceed with caution.

Melatonin is a human hormone produced deep in the brain by the pineal gland, dubbed "the seat of the soul" by philosophers in ages past. Discovered about 40 years ago, melatonin has been called the "darkness" hormone. Production rises at night, falls by day, and affects our internal body clock and sleep cycles. Melatonin has been assumed, logically enough, to have some use as a sleeping pill. Here are some questions, facts, and mysteries.

Does melatonin production decline with age?

The answer, until recently, was thought to be yes. But a new study at the Harvard Medical School of healthy people taking no medications or drugs found no differences in melatonin levels between the young and old. In earlier studies medications such as aspirin taken by older people may have suppressed melatonin levels. Melatonin levels may vary naturally in different groups; age does not seem to be the factor. Different people have different levels, and levels vary according to time of day.

Bottom line: If your body already produces enough melatonin, taking additional doses may not be advisable. No one knows what the long-term effect might be. And it's difficult to determine what "enough" is.

Is melatonin an effective sleeping pill?

Most scientists agree that melatonin helps people fall asleep faster, but it may not help them stay asleep. Like benzodiazepines (such as Valium or Halcion), often prescribed as sleeping pills, melatonin can produce a "hangover" and drowsiness the next day. Long-term safety is still a question. It's true, as one researcher puts it, that "no catastrophes have been related to its use" (such as the outbreak of severe illness caused by a similar "natural" substance, tryptophan, once sold as a sleeping pill). Melatonin is being heavily marketed as a sleeping pill, particularly for older people, but nobody knows if the dosages listed on labels are accurate or if the products are pure. Good clinical trials have never been done on melatonin treatment for insomnia.

Bottom line: If you need a sleeping pill, talk to your doctor. No known sleeping pill has proven safe and effective for more than short-term use.

Does melatonin alleviate jet lag?

Thousands take it for this purpose, but the benefits have never been clear. Various dosages of melatonin have been used in studies, making comparisons difficult. "Jet lag" itself is hard to measure. As reported recently in the American Journal of Psychiatry, a team of researchers devised a scale for measuring symptoms, and a group of Norwegian physicians flying between Oslo and New York were recruited as subjects. Melatonin showed no benefit against jet lag. If you're flying east, exposing yourself to sunlight the next morning is a pretty good treatment—most purveyors of melatonin suggest this, in addition to the pills. It's possible, though, that light is more effective than melatonin. You might be just as well off without the pills. Or maybe light works with the pills. Nobody knows.

Bottom line: The jury is still out on melatonin and jet lag.

Is melatonin replacement therapy justifiable for all postmenopausal women?

No. Some researchers think low melatonin levels cause menopausal symptoms, but they may be wrong. HRT (hormone replacement therapy) has been studied much more extensively than melatonin, but no one recommends it for all postmenopausal women.

Bottom line: Hormones are powerful substances that, even in small doses, can produce unexpected and unwanted results.

Is melatonin an antioxidant, and thus a protector against aging and chronic diseases?

A recent review of studies by researchers at Louisiana State University confirms that it is indeed a powerful antioxidant. But nobody knows what this means. Until we learn more, "the full potential benefits of melatonin must remain something of a mystery," these researchers concluded.

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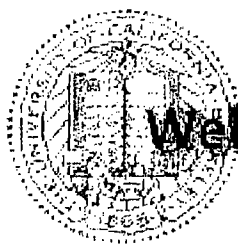
Last words: If you are taking, or thinking of taking, melatonin, talk to a physician—and one who's not selling melatonin. Having your levels measured won't tell you anything, since levels vary from person to person and from hour to hour. Chronic use of melatonin supplements may suppress the body's own production of the hormone. Nobody knows what might happen if you have high natural levels and take a supplement on top of that. Melatonin can interact with other hormones, which is why, in part, pregnant women and children should never take it. Such drugs as aspirin, beta blockers, and tranquilizers can affect melatonin levels. Finally, nobody knows what dosages to take. Products are not standardized. Thus, you really don't know what you're swallowing.

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Microhydrin

Claims, Benefits: Ultimate antioxidant. Cure-all.

Bottom Line: The health claims made about Microhydrin are outrageous and not supported by science. Don't fall for products that are being promoted with piles of technical, pseudo-scientific gobbledygook.

Full Article, Wellness Letter, November 1999

High on ions, short on facts

As we noted in August, some distributors of the cure-all supplement Microhydrin have been claiming that the WELLNESS LETTER "reviewed and approved" it. This claim is bogus. The hard-sell multi-level marketing campaign (via the Internet and audio- and videotapes) for Microhydrin raises many other red flags.

Microhydrin is made by a company called Royal BodyCare. Its inventor, Patrick Flanagan, appears on the tapes and is said to be a "Nobel Prize nominee" (nominees' names are never made public—see our December 1998 issue). He claims that his discovery is based on the special high-altitude water consumed by the Hunza people of northern Pakistan, who supposedly live to well over 100 and don't get cancer. "Hunza-type" water is said to contain special minerals and negative hydrogen ions, and these are supposed to make Microhydrin the ultimate antioxidant (that is, battler of cell-damaging free radicals). Tap water, it's claimed, is a villain because it robs the body of hydrogen ions. Aging, chronic diseases, everything bad comes down to a lack of negative hydrogen ions.

The health claims made about Microhydrin are outrageous. Not only is it supposedly "thousands of times more effective than any other known antioxidant," but also the most exciting nutritional discovery of the century, one that will prevent aging, cancer, heart disease, tooth decay, asthma, impotence, diabetes, athlete's foot, vision problems, you name it. The tapes are filled with testimonials. A child with a lung infection was cured by Microhydrin. It revived a dying cat. A woman bitten by a scorpion was saved by Microhydrin. One user says it prevents sunburn, another that it boosts his energy.

Science fiction

Of course, there is no such thing as a cure-all. Still, prospective buyers may yearn to believe in the promises. It is hard not to be overwhelmed by all the scientific jargon and

charts presented in support of Microhydrin on the Internet, on the tapes, and in the brochures. *But the "science" is fiction, and the chemistry all wrong.*

Negative hydrogen ions can't exist in water, according to Dr. William Pryor, director of the Biodynamics Institute at Louisiana State University and a leading expert on free radicals. Marketers of Microhydrin claim that it reduces the surface tension of water so that fluids can pass through cells and toxins can be released. That makes no sense, says Dr. Pryor. The explanation for how Microhydrin boosts energy: "total garbage." The whole idea that the source water for Microhydrin is better than other water, let alone life-prolonging, is nonsense. All water is simply H₂O. The other experts we consulted agreed.

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Words to the wise: Increasingly, "nutritional supplements" are being promoted with piles of technical, pseudo-scientific gobbledygook. Don't fall for such products—especially on the Internet—however enthusiastic the multi-level marketers or "Nobel prize nominees" may be.

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Minerals, Chelated

Claims, Benefits: Better absorbed than other mineral supplements.

Bottom Line: There's no need to pay premium prices for these minerals, which are bonded to certain amino acids. They may be less well absorbed than others.

Full article, Wellness Letter, August 1997:

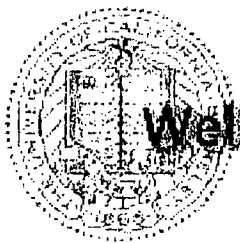
Ask the Expert

Q: Are chelated vitamin and mineral supplements superior to the regular kind? What does "chelated" mean?

A: According to Dr. Sheldon Margen, chairman of our editorial board, there has been little research on minerals chelated with amino acids, and no evidence that chelated minerals are absorbed any faster or better than the regular kind. *There's no reason to pay premium prices for chelated minerals.* (Vitamins, by the way, cannot be chelated, but may be part of a daily supplement containing chelated minerals.) "Chelate" means "claw," and chelated minerals have been chemically bonded, so that they figuratively hang on, like a claw, to amino acids (the building blocks of protein) or other organic acids. The theory is that this makes them more absorbable. In fact, when the chelated mineral reaches the digestive tract, the mineral is separated from the amino acids by the process of digestion and is handled like any other mineral. Rather than being better absorbed, they might even be less so.

Not all nutrients, and especially not all minerals, in the foods we eat (or supplements we take) are fully absorbed. It's impossible to predict exactly how much of a mineral will be absorbed. Many things affect absorption: other nutrients present in the digestive tract, medications, health problems, age, and so on. Vitamin C, for instance, helps you absorb iron; phosphorous enhances some vitamin B absorption; and vitamin D promotes calcium absorption.

UC Berkeley Wellness Letter, August 1997



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Minerals, Colloidal

Claims, Benefits: Cure-all.

Bottom Line: These are of no value. They are marketed by dozens of companies as "Mineral Toddy," "Mineral Formula," "Micro-Min," and so forth. Get minerals from food instead or from a standard multivitamin/mineral supplement.

Full Article, Wellness Letter, June 1997:

Dead doctors don't lie, but people who sell minerals...

Last year people started sending us copies—dozens of copies—of *Dead Doctors Don't Lie*, a taped lecture by a veterinarian/naturopath named Joel Wallach, which promotes a "colloidal mineral" elixir. "Should we buy this stuff?" our readers asked. It's sold by dozens of companies under names such as Mineral Solutions, Clark's Mineral Formula, Mineral Toddy, Micro-Min, Colloidal Silver, Essential Minerals. Testimonials have flooded the Internet. *The warning signs were clear right away:*

Uh-oh. The products cure/prevent *everything*: AIDS, cancer, TB, malaria, lupus, syphilis, scarlet fever, herpes, pneumonia, typhoid, tetanus, rheumatism, parasites, chronic fatigue, whooping cough, hemorrhoids, ringworm, candida, bubonic plague, obesity, liver disease, thyroid problems, acne, sunburn, menstrual cramps, memory problems, and on and on. Testimonials are the sole support. Cure-alls seldom cure anything.

Hmm. They are sold primarily via multi-level marketing, which turns customers into salespeople. That is, if you buy the product, you can become a distributor and then sell it, via altruistic pitches, to your friends and relatives, who sell it to their friends, etc., with profits passing up to the top of the pyramid, at least in theory. Such "network marketing" of health-related products should always make you suspicious.

Huh? The promotional materials repeatedly state that we can't get the minerals we need from vegetables, fruits, and grains grown on our "depleted" soil. This is not true (see below). The real problem is that Americans simply eat so little produce.

What? Printed on the cassettes was the claim that "the average life-span of an M.D. is only 58 years." That's supposed to prove that doctors don't know much about health. But doctors actually have an above-average life expectancy—more than 75 years.

A prophet brings profits

The story starts in a pseudo-mythic haze. In 1925 Thomas Clark, a rancher in central Utah, finds a legendary spring that Indians claimed had healing powers. Following the spring, he discovers the mineral remains (sometimes called humic shale) of a prehistoric rain forest. He extracts the minerals and passes on the "miracle liquid" to friends and neighbors. This "original" product has spawned a mini-industry, with various companies claiming that their product is the real thing and that the rest are useless, bogus, or dangerous imitations. The elixirs, which often look like muddy water, cost \$25 to \$50 for a one-month supply. Colloidal minerals are also sold in capsule form.

The array of minerals varies greatly from product to product: silver, arsenic, cadmium, lead, aluminum, lithium, titanium, and dozens of others. The colloidal marketers claim that you absorb only 5% of the minerals you normally consume, while their products allow you to absorb nearly 100%. Their minerals supposedly have a natural negative electrical charge that allows them to enter cells easily, as well as to flush out "toxins" that are attracted to them. (A colloid is, like milk and purées, simply a suspension of particles in a liquid.) Minerals from foods and from ordinary supplements are poorly absorbed, they say, because these have a positive charge and can build up to toxic levels in the body. This results in virtually all the debilitating diseases of today. Says them.

A closer look

All the nutrition experts we spoke with dismissed the claims made for colloidal minerals. According to Dr. C. J. van Oss, a specialist in microbiology, geology, and chemical engineering at SUNY Buffalo Medical School, the charge on a mineral should not affect its absorption. The fact that the minerals are in a colloidal suspension also wouldn't matter. Dr. Sheldon Margen, chairman of our Editorial Board, says that even if these minerals were better absorbed, that wouldn't necessarily be desirable, since some of them are potentially toxic and many are of no known use to humans. Moreover, some brands are contaminated by bacteria, according to Dr. Ellen Kamhi of the Corsello Center for Complementary Medicine in New York City. There's no evidence that colloidal silver products, in particular, are safe or can prevent/treat any disease, according to the FDA.

Some of the companies claim that clinical tests have been done on their products, but we have not been able to find a single published study. The conclusion is clear: No one should take colloidal minerals. Fruits and vegetables are the way to go.

Is our soil depleted of minerals?

The claim that American soil has been ruined for growing food is often used to sell nutritional supplements, including colloidal minerals. But, convenient as it may be for salespeople, this idea is a figment of the colloidal imagination. One study by Firman Bear of Rutgers University in 1949 has been relentlessly misquoted in support of this point. The study simply compared the mineral content of several types of vegetables grown in different areas. Because of soil type and fertilizer use, some vegetables had more minerals than others—not a surprise. According to Dr. W. Shaw Reid, director of the Cornell Nutrient Analysis Lab at Cornell University, improved farming methods and fertilizers have made our soil richer than ever. The claim that fertilizers contain

synthetic minerals as opposed to the "organic" ones found in colloidal mineral products is also meaningless, since all minerals are inorganic. To a plant, and to the human body, it doesn't matter where the minerals come from.

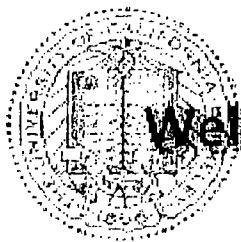
Plants just won't grow in depleted soil. Vitamins in foods are created by the plants themselves. Minerals—such as phosphorus, potassium, iodine, calcium, copper, iron, selenium, fluoride, molybdenum, and zinc—must come from the soil. If the soil lacks any of these, fertilizers compensate. Climate, weather, amount of sunlight, and other factors also affect overall nutritive value. But if the fruits and vegetables you buy look healthy, you can be certain they contain the nutrients they should.

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MSM

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Claims, Benefits: Cures and treats arthritis, plus headaches, muscle pain, athletic injuries, carpal tunnel syndrome, asthma, food allergies, etc.

Bottom Line: This is clearly an unproven "remedy." All the evidence is anecdotal. The long-term effects are unknown. Don't take it.

Full Article, Wellness Letter, December 1999:

New "miracle" for arthritis-how miraculous is it?

Few people with joint pain can have missed James Coburn's testimonials for a new arthritis cure, MSM, which he claims is responsible for his screen comeback and recent Oscar. Is MSM for you?

First, here's some background. Arthritis comes in many forms, but the most common is osteoarthritis, a chronic degenerative joint disease that generally affects older people. It is different from rheumatoid arthritis, a chronic inflammation of the tissue surrounding the joints. Coburn says he suffers from rheumatoid arthritis, not osteoarthritis, but MSM is being marketed for all kinds of arthritis, plus headaches, muscle pain, athletic injuries, carpal tunnel syndrome, asthma, food allergies, and a breathtakingly wide spectrum of other ills. If you've got pain, the pitch seems to be, MSM (pills and cream) will fix it. There's also a bestselling book, *The Miracle of MSM: The Natural Solution for Pain*, by Dr. Stanley Jacob of the Oregon Health Sciences University and two co-authors. MSM has been patented by Robert Herschler as "a product for maintaining good health and improving poor health" and as a drug to treat several conditions, some listed above. Since it is sold as a dietary supplement, MSM has not been approved by the FDA.

How natural can it be?

What is MSM? Methylsulfonylmethane, or MSM, is an organic sulfur compound. It is found in extremely minute quantities in food and human blood and is excreted in barely detectable amounts in urine, but it has never been shown to play any role in body chemistry. It can be synthesized from a chemical called DMSO, dimethyl sulfoxide, an industrial solvent, which is easy to find in hardware stores, where it is sold as a degreaser. DMSO caused some scientific excitement several years ago as a possible liniment to relieve arthritis. Because it is easily absorbed through the skin, it was also

advocated as a vehicle to deliver other drugs into the body. However, it proved to have potentially toxic effects. It has been approved by the FDA for one rare bladder disease and for veterinary use. But some people still use DMSO topically as an arthritis remedy and pain reliever for sore muscles. MSM lacks many of the properties of DMSO, including its very bad smell, but it is chemically similar (in fact, its chemical name is DMSO₂).

Exactly how Dr. Jacob and his colleagues decided that MSM would cure arthritis, as well as a whole range of other painful conditions, is hard to discern. He claims to have treated hundreds of patients successfully, but all the evidence is anecdotal. In his book, Dr. Jacob's patients are repeatedly quoted as saying, "It worked like a miracle." But he and his colleagues have published almost none of their scientific findings. Their one preliminary study, published as an abstract, is so poorly done as to scarcely qualify as a study at all. No one has any idea what the long-term effects of MSM might be. Because MSM occurs naturally in the body, Dr. Jacob (as well as the many companies marketing MSM) emphasizes its "naturalness." But what is natural about this supplement? Hydrochloric acid is another natural compound in the body, but that does not mean it is a good idea to swallow it.

This is clearly an unproven remedy. Because osteoarthritis and other forms of arthritis are chronic, painful, and essentially incurable, those who suffer from these diseases are easy to target for questionable treatments, diets, copper bracelets, and other unproven but highly profitable "remedies." Another problem is that the pain of osteoarthritis, in particular, tends to come and go. One week you're in pain, the next week you feel better. Thus if you've taken something, it's easy to assume that the pill is what helped.

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Final words: MSM is sold alone or combined with vitamins and other supplements of questionable value such as glucosamine and chondroitin sulfate. Dr. Jacob's book has all the earmarks of hard sell with nothing but anecdotes to back it up. James Coburn is a paid spokesman for Gero Vita Laboratories, a Canadian company specializing in "miracle" dietary supplements, including MSM. We advise you not to use MSM.

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Multivitamins/Minerals

Claims, Benefits: Provides nutrients to supplement a healthy (or unhealthy) diet.

Bottom Line: Many people should take a basic supplement, especially people over 60, women of child-bearing age, vegans, and anyone not eating a balanced diet. It needn't cost more than pennies a day.

Full Article, Wellness Letter, July 1999:

Should you take a multivitamin? And which one?

As more and more Americans take multivitamin/mineral pills, marketing hype and consumer confusion have increased. Of course, it's possible—and usually preferable—to get your nutrients from a healthy, balanced diet (vitamin E is an exception, see below). But surveys consistently show that large groups of Americans tend to fall short in a variety of key vitamins and minerals.

Here are some reasons to consider taking a multi:

- **Many, if not most, people over 60** don't get the nutrients they need, for a variety of reasons (see Wellness Letter, February 1998). For instance, aging itself may make it more difficult to absorb and utilize certain nutrients. The major problem nutrients for older people are vitamins D, C, B6, and B12, and folic acid, as well as minerals such as zinc.
- **All women who might become pregnant**—that is 70 million Americans—should take 400 IU of folic acid daily. This B vitamin helps prevent neural tube birth defects that affect thousands of babies every year in the U.S. The surest way to get that much folic acid is with a multi. The folic acid in supplements (and in fortified grain products) is better absorbed by the body than the vitamin found naturally in food.
- **Many premenopausal women do not consume enough iron.** The amount found in most basic multivitamins can help prevent a decline in women's iron stores.

- **Vegans**, who consume no animal products, may not be consuming enough vitamin B12, zinc, or calcium.
- **People on low-calorie diets, as well as heavy drinkers**, are likely to have a shortfall of vitamins and minerals.
- **Poor people** tend to have the poorest diets and would thus benefit from a multivitamin.
- **Anyone else not eating a balanced diet** (at least five fruits and vegetables a day, as well as whole grains, low-fat dairy, and small servings of lean meat, poultry, or fish) may not be getting enough folic acid, B6, and B12. In recent years evidence has grown about the role these B vitamins play in lowering homocysteine levels in the blood and thus reducing the risk of heart disease (see WELLNESS LETTER, November 1997). Folic acid may also help prevent cervical and colon cancer. Most multivitamin supplements have 100% of the daily recommended intake of these Bs.
- **Pregnant women** should probably take a multi, but should discuss their nutritional needs with their doctors.

Not everyone needs a multivitamin/mineral. But the above list includes more than half of all Americans, for whom a basic multi makes sense.

Your buying guide

The labels on supplements list the amount of each nutrient and the percentage of the "Daily Value" (the FDA's reference values used on foods and supplements) that represents. *Here's what you need to know:*

- **A multivitamin/mineral need not cost more than a few cents a day.** Most store-brand and generic products are fine.
- **Look for "USP" on the label.** This means that the product meets the standards of the U.S. Pharmacopeia, including one for disintegration, and has been tested under controlled laboratory conditions. Most brand-name vitamins aren't labeled USP, because the manufacturers either don't want to do the tests, or prefer to guarantee the products via the brand names. Generic or store brands are more often labeled USP, and are cheaper anyway.
- **Most important: Look for 100% of the Daily Value of the following vitamins:** A (some from beta carotene), B1 (thiamin), B2 (riboflavin), B3 (niacin), B6, B12, folic acid, and D.
- **Look for up to 100% of the Daily Value of the following minerals:** copper, zinc, magnesium, iron, iodine, selenium (not more than 200 mcg), and chromium (not more than 200 mcg). Most multis

also contain tiny amounts of trace minerals such as boron, manganese, and molybdenum.

- **Least important:** Most contain some potassium, phosphorus, pantothenic acid, and biotin, but you can ignore these since they are easily found in food.

- Most multis contain 100%, or even 200%, of the Daily Value of vitamins C and E, but this is not enough to provide the full antioxidant effects and other potential benefits of these vitamins. **We recommend that everyone consume 200 to 800 IU of E and 250 to 500 milligrams of C a day.** You'll definitely need a pill to get that much E (that's the amount in a pound or two of sunflower seeds or two quarts of corn oil). And unless you eat lots of broccoli, peppers, kiwifruit, and oranges, you'll probably need a pill to get that much C.

- Calcium is bulky, so a multi will contain only a small amount of it. Unless you consume enough dairy products, broccoli, and salmon or sardines (with bones), **you should take separate calcium supplements.** Everyone needs at least 1,000 milligrams of calcium a day, from food and/or supplements. Women over 50 and men over 65 need 1,200 to 1,500 milligrams a day.

- **Premenopausal women** should look for 100% of the Daily Value of iron. In contrast, people with the genetic disorder hemochromatosis (who absorb too much iron) should avoid supplemental iron.

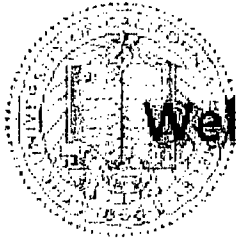
- **More than 100% of the Daily Value isn't necessarily better.** Up to 200% of the B vitamins is okay, but large doses of copper, for instance, can interfere with the absorption of zinc, and vice versa. And large doses of vitamin A or D can be dangerous.

- **Take your multi with food.** If it contains iron, don't take a calcium supplement at the same time, since iron interferes with calcium absorption.

- **Words you *don't* need to see listed on the bottle:** "stress formula," "sugar-free," "starch-free," "natural," "super-potency," "senior formula," "slow-release," enzymes, hormones, amino acids, PABA, or ginseng and other herbs. These serve no purpose and add to the price.

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But keep in mind: *Even if you take a multi, you still need to have a balanced, healthy diet.* These pills are not magic bullets. Foods—particularly fruits, vegetables, and whole grains—provide fiber as well as countless beneficial phytochemicals not found in



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Noni Juice

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Claims, Benefits: Cures cancer, multiple sclerosis, arthritis, etc.

Bottom Line: There's no scientific evidence to back up the claims, only testimonials.

Full article, Wellness Letter, March 2001:

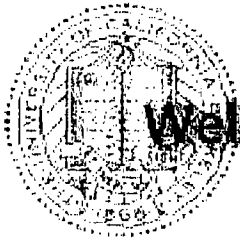
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Don't believe the health claims made for noni juice, which comes from the fruit of the morinda plant, consumed by Polynesians and other Pacific peoples for centuries. Despite the claims in ads and on the Internet, this often foul-tasting juice won't cure cancer, multiple sclerosis, arthritis, or hypertension, nor is it "the most important natural health discovery in decades." All the "evidence" for noni juice comes from testimonials, often from people selling the expensive juice via a multi-level marketing program. In 1998 the attorneys general of California, Arizona, New Jersey, and Texas forced a leading marketer (Morinda) to stop making health claims for noni. Nevertheless, the claims have proliferated in cyberspace and elsewhere.

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Pycnogenol

Claims, Benefits: Potent antioxidant.

Bottom Line: Derived from pine bark, Pycnogenol may prove to have a bright future as more knowledge emerges. But we can't recommend that you take it at this point, since nothing is known about which diseases it could prevent or treat, or what dosages would be needed.

Full Article, Wellness Letter, November 1997:

How powerful is Pycnogenol?

Noted for their beauty, their lumber, and such products as paper pulp and turpentine, pine trees are full of interesting chemicals. In February we reported on sitostanol, a pine oil extract used in Finland to make a flavorless and costly margarine that appears to lower blood cholesterol if you eat enough of it. Now there's Pycnogenol (pronounced pick-NODG-en-ol), derived from the bark of a pine tree (*Pinus maritima*, also called *Pinus pinaster*) native to the coast of Southern France. It was first extracted by a French researcher, Jacques Masquelier at the University of Quebec, who had read accounts of the healing properties of pine bark extract in the journals of the famed sixteenth-century French navigator, Jacques Cartier. Masquelier was able to isolate, and obtain a U.S. patent for, the compound, which is a mix of some 40 polyphenols and other phytochemicals. Though patented by Masquelier, Pycnogenol is the registered trademark of a British company, which manufactures a version of the pine bark extract.

This compound has been used in Europe for many years to treat a variety of disorders, from varicose veins to diabetic blood vessel disorders. What are these polyphenols in Pycnogenol? They are naturally occurring chemicals, common to many plants, that have biological effects on animals, including humans. They are not vitamins (which we cannot live without), but like some vitamins they act as antioxidants, neutralizing the effects of free radicals, the cell-damaging particles generated in our bodies by various processes, including the basic processes of life.

Pining for a miracle

Pycnogenol, like many other dietary supplements, has been touted as a virtual cure-all. However, it has also been under study by serious, mainstream scientists here and in Europe. For example, Dr. Lester Packer, a researcher at the University of California at

Berkeley, believes strongly in its antioxidant potential. Yet, he says, "the scientific basis for the understanding of its activity is scarce." There is as yet no evidence, according to the FDA, that Pycnogenol is effective against specific diseases.

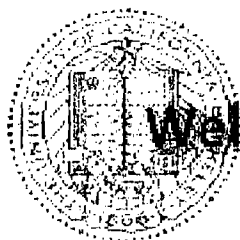
Like selenium as a cancer preventive, or Coenzyme Q-10 for heart disease, Pycnogenol may prove to have a bright future as more knowledge emerges. We cannot recommend that you take it at this point, since nothing is known about which diseases it could prevent or treat, or what dosages would be needed. We can wholeheartedly recommend that you eat a diet rich in blueberries, apples, oranges, tea, onions, and other fruits and vegetables rich in polyphenols and other phytochemicals. So far as anybody knows, Pycnogenol contains no magic ingredient you can't get from nourishing food.

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Quercetin

Claims, Benefits: Works like an antihistamine, treats allergies, prevents heart disease and cancer.

Bottom Line: There's little or no evidence to support these claims. Stick to conventional antihistamines.

Full Article, Wellness Letter, January 2000:

Ask the Experts

Q: Is quercetin a good remedy for allergy symptoms?

A: No one knows. Quercetin is a plant pigment in many foods—onions, apples, berries, tea, and red wine. It's not a nutrient, but is classified as a flavonoid. Once thought to be vitamins, flavonoids were given such names as vitamin P and vitamin C2. Like many other plant chemicals, quercetin is sold as a supplement.

Some lab studies suggest that quercetin acts as an antihistamine. In an allergic reaction, your body produces histamine, which causes sneezing, runny nose, and so on. Some claim that quercetin is more effective than conventional antihistamines and does not cause such side effects as drowsiness. Not a scrap of published evidence backs this idea. Some researchers think quercetin in red wine protects the heart. Others are interested in its cancer-preventing potential. We're a long way from knowing what it does.

We think you should stick to conventional antihistamines. The new prescription brands are effective, though expensive, and they don't cause drowsiness. At least you know what you're getting. With quercetin supplements, you have no guarantee.

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Rose Hips

Claims, Benefits: A more natural, more absorbable source of vitamin C.

Bottom Line: Vitamin C is easily absorbed—your body doesn't need any help. In any case, you can't tell what substances, and how much, are in rose hip "extracts." There may be little or none of them in vitamin C pills labeled "with rose hips." There's no evidence that rose hips help your body absorb vitamin C. This is just a more expensive source of C.

Full Article, Wellness Letter, March 1996:

Rose hips: worth the price?

If you've ever bought vitamin C supplements (the WELLNESS LETTER recommends 250 to 500 milligrams a day), you've probably wondered about rose hips, which are listed on the labels of many C pills. Today you'll find rose hips also in teas, capsules, liquid extracts, and jellies. Should you be hip to rose hips? Should you pay up to 10 times more to get your C from rose hips than from synthetic C pills?

Only if you have money to burn. Rose hips, the red fruit of various rose species, are indeed a concentrated natural source of vitamin C. They became popular during World War II, when the British, who couldn't import citrus fruits, depended on rose hips, which they made into a syrup, to supply vitamin C and prevent scurvy. Three ounces of fresh rose hips can supply as much as 1,700 milligrams of C, depending on the source of the rose hips and how they've been handled and processed. But there's no way to know how much rose-hip extract is in vitamin C pills and how much C it provides—probably not much. The labels typically state "500 milligrams plus rose hips," which is pretty vague. A 500-milligram vitamin C capsule made solely from rose hips would be quite a horse pill.

What about other nutrients in rose hips? Like citrus fruits, rose hips probably contain other beneficial phytochemicals (such as bioflavonoids). First of all, no one knows exactly what most of these are. Second, no one knows how much of these mystery substances gets into rose hip "extracts." Little or none of them would make it into vitamin C pills. There's no evidence that these other substances help your body absorb vitamin C, despite the claims. In any case, C is easily absorbed—your body doesn't need any help.

Natural vs. synthetic vitamins

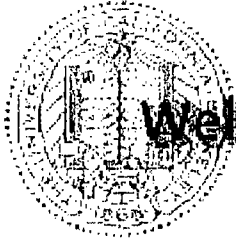
"Natural" doesn't mean much when it comes to vitamins. Often companies add a small amount of plant extract, such as rose hips, to synthetic vitamins and then call them natural. (Though supplement makers would like you to believe otherwise, they all buy their raw vitamins and minerals from the same handful of giant manufacturers.) Even if you found C pills that got all of the vitamin from rose hips, they wouldn't be better than the cheapest synthetic C pills. Synthetic vitamins, made in a lab, are identical to the vitamins found in foods. The body can't tell the difference. The only real difference is price.

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St. John's Wort

Claims, Benefits: Alleviates depression.

Bottom Line: Preliminary evidence shows efficacy against mild forms of depression. It should not be taken as a diet drug or with prescription antidepressants. Though sold as a "dietary supplement," this is a drug, and can interact with other drugs you may be taking.

Full Article, Wellness Letter, May 2000:

Worry wort

Millions of Americans take St. John's wort for depression, anxiety, or insomnia. Most of them assume that this herb and "dietary supplement" is perfectly safe, unlike conventional antidepressants, which often have side effects. It's not a "drug," so they think St. John's wort is harmless. As we've reported, however, herbs can be powerful substances and have side effects. That's why it's important to tell your doctor if you're taking St. John's wort (or other herbs), especially if you take prescription medication.

Several recent studies have pointed out dangerous interactions between St. John's wort and other medications:

- The herb can reduce blood levels of an important HIV drug (indinivir) by more than half. As a result, the body may clear the drug before it has time to work fully; low blood levels of indinivir can lead to drug-resistant virus. St. John's wort may also affect other HIV drugs that are similarly metabolized by the body. Many people with HIV take herbs, especially St. John's wort.
- It reduces the effect of the blood thinner warfarin (brand name Coumadin).
- It reduces the effect of the heart drug digoxin.
- It reduces the effect of cyclosporin, which helps prevent organ rejection in people given transplants.
- It may interact with some oral contraceptives (OCs) to cause

breakthrough menstrual bleeding and may reduce the effectiveness of OCs in preventing pregnancy. Talk to your doctor if you are on the Pill and want to take this herb.

- Older people taking prescription antidepressants (Prozac-like drugs) and St. John's wort suffered dizziness, confusion, headaches, and anxiety, according to one study. The elderly are particularly susceptible to this interaction, the symptoms of which are often misdiagnosed as worsening psychiatric symptoms or a neurologic disorder. But younger people also should not combine the herb with conventional antidepressants.

St. John's wort contains at least 10 compounds that can have pharmacological action. Some of these are known to directly affect the way the liver metabolizes drugs, which can result in blood levels of these drugs that are too high or too low. But since these compounds are not standardized, and people take such a wide range of dosages, the interactions are often unpredictable.

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Further news: If you take St. John's wort and are going to receive anesthesia, make sure your anesthesiologist knows. The herb can intensify or prolong the effect of some anesthetic agents.

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Full Article, Wellness Letter, September 1997:

A better treatment for depression?

The yellow flowers of a plain old weed called St. John's wort (Latin name, *Hypericum perforatum*) have for centuries been used in teas and other preparations as a treatment for nervous disorders, and indeed for everything from anxiety and inflammation to insomnia and stomachache. "Wort" comes from the Old English word for "plant," and this particular wort was named for St. John the Baptist, probably because the plant blooms around June 24, celebrated as the saint's birthday. St. John's wort is native to Europe but now grows throughout the U.S. and Canada. Unlike many herbal remedies, St. John's wort has been extensively studied; AIDS researchers, for example, are currently investigating it for antiviral activity.

Particularly in Germany, St. John's wort has long been used as an antidepressant. German physicians prescribed 66 million daily doses in tablet or capsule form in 1994 alone. In Germany, as in the U.S. and Canada, St. John's wort is sold over the counter. Books and articles, as well as word of mouth, have made it famous as a do-it-yourself antidepressant.

Currently the most widely used prescription antidepressants include Prozac and the other so-called SSRIs—selective serotonin re-uptake inhibitors—as well as drugs that affect other brain chemicals. (Serotonin is the brain chemical that produces a "happy" feeling, and SSRIs help regulate serotonin.) But more than half the people taking such drugs experience side effects, sometimes severe ones. St. John's wort, according to some reports, may work as well as Prozac, at least for milder forms of depression, without serious side effects. Better treatments for depression would certainly be welcome.

Weeding through the studies

There has been no shortage of studies on St. John's wort, which have appeared in such respected publications as the *British Medical Journal* and *Journal of Geriatric Psychiatry and Neurology*. However, the evidence remains shaky.

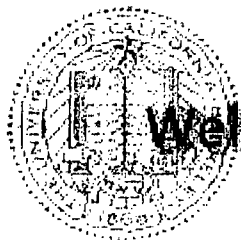
The study in the *British Medical Journal* this year re-analyzed 23 studies of varying quality. In the studies that looked at an extract of St. John's wort standardized for hypericin (one of its active ingredients) versus a placebo (an inactive substance), half the patients on St. John's wort improved, as opposed to 22% on the placebo. In three studies comparing St. John's wort to standard antidepressants, it was somewhat more effective than the drugs. None of the studies lasted more than six weeks—not long enough to determine the duration of the effects or to detect any long-term side effects. However, there have been no reports of serious side effects among long-term users in Germany. There was no evidence that St. John's wort worked against serious, as opposed to mild, depression. In short, some results have been promising, but we still know fairly little—whether the herb really works and, if so, how. Commission E of the German Federal Health Agency, which oversees herbal remedies in that country, says that the plant is not toxic. The Council of Europe lists the herb as a source of natural food flavoring, but limits its concentration.

The National Institutes of Health in this country are planning a large study of St. John's wort. Meanwhile, if you're thinking of taking St. John's wort, be aware of some reported minor side effects: gastrointestinal discomfort, fatigue, dry mouth, and dizziness. Livestock that feed on the plant have developed sun sensitivity in the skin and eyes (it's unknown if this would occur in humans). If you are very sensitive to the sun or are taking tetra-cycline (which produces photosensitivity), you might be wise to avoid St. John's wort, or at least to discontinue it if such symptoms occur. Pregnant and lactating women should also avoid it.

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Not the last word on the wort: Because St. John's wort has been extensively used in Europe, we see no reason not to try it for mild to moderate depression. But don't use it along with conventional antidepressants. And don't make your own diagnosis. Instead, see a doctor or therapist, and at least let him/her know if you decide to try St. John's wort. You might also wish to consult *Hypericum & Depression* by Dr. Harold Bloomfield, Dr. Mikael Nordfors, and Peter McWilliams or the website at www.hypericum.com.

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SAM-e

Claims, Benefits: "Natural" treatment for depression, arthritis, and liver disease.

Bottom Line: Some studies suggest that SAM-e might be an effective treatment for depression, with fewer side effects than antidepressant drugs. But the real benefits and risks of SAM-e are still unclear. In theory, it may increase the risk of heart disease. People with depression or joint pain should seek medical advice before trying SAM-e. If it works, it's a drug, and should be regulated and prescribed like one, as it is in Europe.

Full Article, Wellness Letter, January 2000:

A "natural" treatment for depression?

What is SAM-e? It's one of the hottest supplements on the market. Not an herb, hormone, vitamin, or any kind of nutrient, SAM-e is a stabilized, synthetic form of S-adenosylmethionine (SAM), a chemical produced naturally in all animals. In the human body SAM is known to be essential to at least 35 biochemical processes, including maintaining the structure of cell membranes and manufacturing substances vital to transmitting nerve impulses and influencing emotions and moods. SAM-e was brought into the American marketplace with every form of hype, including enthusiastic articles in *Newsweek*, plenty of TV publicity, two promotional books, full-page ads in newspapers, and a plethora of websites. SAM-e is said to be an effective, indeed magical, treatment for depression, arthritis, and liver disease, among other things. Like other supplements, it is unregulated.

Regardless of the hype, there may actually be something to the claims-or maybe there will be some day. Unlike much of what's on the market, SAM-e has been the subject of some scientific research. First tested as a treatment for schizophrenia, it proved ineffective. But in the 1970s some clinical trials in Italy, Germany, and other European countries did suggest that SAM-e might be an effective treatment for depression, with fewer side effects than antidepressant drugs.

An encouraging maybe

Some research has shown that SAM-e provides relief from arthritis pain, without the stomach irritation caused by aspirin and similar drugs. And there are other possibilities, too. For instance, SAM-e may aid in joint repair. The possibilities are encouraging.

Most studies so far have been small and brief (and some have used large intravenous doses), but since SAM is so important to life, SAM-e might have uses as a drug.

But the problem is threefold: first of all, the possible benefits and risks of SAM-e remain unclear. In Europe it is sold as a prescription drug for arthritis, depression, and liver disease. At least that means a doctor is overseeing the treatment. Here, where SAM-e can be bought as easily as a multivitamin, people can simply dose themselves-which may be unwise when so much remains to be discovered.

Secondly, its promoters, particularly Richard Brown, the author of *Stop Depression Now*, say SAM-e has no side effects, but anything that works like a drug has side effects of some kind, and may interact with medications or foods.

But the most important potential problem: SAM is converted into homocysteine in the body. High levels of homocysteine may raise the risk of heart disease. SAM-e is likely to promote higher levels, though no one knows how high.

What you see may not be what you get

Marketers of SAM-e generally say a "dose" is 400 milligrams daily, but there's no way to find a standardized dose in the current market. In addition, raw SAM-e is said to degrade quickly unless stored at proper temperatures, and you have no guarantee that the pills you buy have been properly handled. One big conglomerate, the BASF company, is importing raw SAM-e from Europe, and it's being sold under various labels in General Nutrition Stores and elsewhere in the vast health-food marketplace. And SAM-e is very expensive. A daily dose can cost anywhere from \$2.50 to \$18. You have to take it over the long term to get any results, it's said. All this is wonderful for the seller, but may be less so for you.

What should you do about SAM-e? Here are a few pointers:

- For healthy people SAM-e has no value. Don't take it as a tonic or mood booster. It does not prevent any known disorder.
- Contrary to rumor, SAM-e will not repair the liver damage caused by heavy drinking.
- Side effects have been reported, including stomach upset and other gastrointestinal problems.
- If you are suffering from depression, seek medical advice before trying this supplement. Depression is a treatable illness, requiring professional care. Don't try it on your own or combine it with antidepressant drugs. For those with bipolar disorder (manic depression), SAM-e may have unpredictable adverse effects.
- If you have joint pain, talk to your doctor before taking SAM-e. Make sure it's actually arthritis that's causing the pain. Don't give up conventional treatments in favor of SAM-e with-out at least telling your doctor of your decision.

- If you do decide to try it, make certain your diet is rich in fruits and vegetables, and take a multivitamin. A high intake of three B vitamins (folic acid, B6, and B12) can lower homocysteine levels, in case SAM-e raises them.

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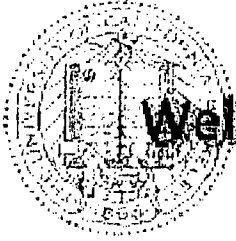
Words to the wise: SAM-e is not a "natural medicine" and not a "dietary supplement." How the FDA can allow it to be sold as such remains a mystery. If it works, it's a drug, and should be regulated and prescribed like one, as it is in Europe.

UC Berkeley Wellness Letter, January 2000

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Sassafras

Claims, Benefits: Tonic, performance enhancer, "blood purifier"

Bottom Line: Contains safrole, an aromatic oil known to be carcinogenic in animals. Banned by FDA. Unsafe and ineffective, according to Varro Tyler.

This information was part of a major article on herbal medicine in the WELLNESS LETTER, September 1997.

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Saw Palmetto

Claims, Benefits: Shrinks the prostate, reduces symptoms of benign prostatic hyperplasia (BPH).

Bottom Line: There is some positive evidence for its effectiveness against prostate problems, but there's a lack of real scientific information based on well-designed clinical trials. Like the drug Proscar, it can alter results of a PSA test and make prostate cancer hard to diagnose. If you take it, tell your physician.

Full Article, Wellness Letter, May 1999:

The prostate herb

As we reported in 1997, phytotherapy (plant-derived substances used as drugs) for prostate problems is widely used in Europe and has attracted interest in the U.S. Saw palmetto, derived from berries of the saw palm tree (*Serenoa repens*, *Serenoa serrulata*, and other species) is one such therapy. The evidence about saw palmetto is pretty sparse. But a new if inconclusive study, which appeared in the *Journal of the American Medical Association* in November, prompts this update.

Dealing with BPH

First, some background on BPH, or benign prostatic hyperplasia. This enlargement of the prostate is common in men over 40; half of all men over 60 have it to some degree. Though many men fear that it is a prelude to cancer, "hyperplasia" simply means an overgrowth of normal cells. It can cause unpleasant symptoms: the need to urinate may become more urgent and more frequent, perhaps waking you up several times at night, producing a stop-and-start flow of urine or urinary leaking, and/or giving you the sensation that you have not completely emptied your bladder.

BPH, however, is not harmful in itself-hence the term "benign." No one knows what causes it, and there is no way to prevent it. Diet has no known connection with BPH. It may be caused by normal changes in hormone levels, especially a drop in testosterone. (Testosterone therapy, however, is not a safe or recognized treatment for BPH.) Still another theory is that a substance called dihydrotestosterone (DHT), produced by aging men, promotes cell growth. BPH does not affect sexual function or the ability to have intercourse. It sometimes has no symptoms at all.

You should not rely on a self-diagnosis of BPH, but should see a physician. Urinary

symptoms may be caused by something more serious than BPH that needs immediate treatment. BPH is relatively easy to diagnose by means of symptoms and a digital rectal exam. The doctor may order urine tests to rule out infection, and a PSA (prostate specific antigen) test to rule out prostate cancer.

For men with mild symptoms, "watchful waiting"-meaning regular checkups-is the best course. Mild symptoms often clear up or remain stable without treatment. According to Dr. Joseph Oesterling, writing in the *New England Journal of Medicine* in 1995, studies show that about 40% of men with mild symptoms improve without treatment, 45% continue with no change, and only 15% deteriorate.

If your symptoms worsen, however, the first line of treatment is usually prescription drugs. Finasteride (brand name: Proscar) can shrink the prostate. Certain alpha blockers (Cardura, Minpress, Hytrin), which are also used to treat hypertension, help relax muscle in the prostate and bladder, reducing urinary symptoms and improving urine flow. But sometimes drugs don't work and/or produce unacceptable side effects. Studies have shown that finasteride works best if the prostate is greatly enlarged, but not in cases of mild enlargement. The drug may take six months to produce any improvement, and may cause reduced sexual function and desire. It reduces PSA levels and thus may decrease the usefulness of the PSA test for diagnosing prostate cancer. The alpha blockers may also reduce symptoms, but can produce side effects such as reduced sexual function, low blood pressure, and dizziness. Another drawback is cost.

The latest on saw palmetto

Saw palmetto contains certain phytosterols, substances that seem to curb prostate cell growth. Its action in the body is probably similar to that of finasteride and other drugs. The study in *JAMA* reviewed 18 clinical trials of saw palmetto, none of them first rate. For example, some were brief or small or limited in other ways. Only two used standardized doses. But they were deemed worthy of notice by these researchers. Compared with a placebo (a sham treatment), saw palmetto improved urinary tract symptoms, including nighttime urination, by about 25%. Men taking saw palmetto were twice as likely to report improvements as those taking a placebo. In Germany, other studies have tended to support the effectiveness of saw palmetto.

Another recent study of saw palmetto (supported by a supplement manufacturer and conducted at the University of Chicago Medical School) was not in any sense a scientific investigation, but a kind of loose "trial run" with 46 men and no control group. The researchers admitted that they hadn't proved anything, and that if their patients had improvements in urinary tract symptoms, which was questionable, it might simply have been a placebo effect. One noted urologist commented about this, "Maybe a 'placebo' for BPH is not so terrible?" But wouldn't a safe, inexpensive treatment that actually worked be even better than a sugar pill or wishful thinking? Shouldn't doctors and patients seek something better than a placebo effect?

What's terrible is the lack of real scientific information based on well-designed clinical trials of saw palmetto. But clinical trials are enormously expensive and not likely to be conducted for a product that cannot be patented. Meanwhile, supplement manufacturers can market saw palmetto without any further proof of efficacy.

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Remember this: A 90-day supply of finasteride costs about \$200, compared with \$10 to \$50 for a 90-day supply of saw palmetto. Fewer side effects (such as erectile dysfunction) are reported with saw palmetto than with drugs, at least in studies so far. Not much is known about the long-term effects of saw palmetto. *If you want to try it, do so only after seeing a doctor. If you have prostate symptoms and dose yourself without a diagnosis, and it turns out to be cancer, you may not find out until it is at an incurable stage.* Be aware that herbal remedies are not regulated or standardized: you may be getting what the label says, or you may not.

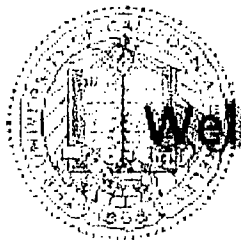
If you are taking saw palmetto or any other over-the-counter treatments, tell your doctor in advance of taking a PSA test. Any drug-herbal or prescription-for BPH may alter the results of a PSA test and thus make prostate cancer hard to diagnose.

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Selenium

Claims, Benefits: Prevents cancer, notably prostate cancer; boosts the immune system; acts as a potent antioxidant.



Bottom Line: Evidence is accumulating that this mineral is an important antioxidant and plays many important roles in the body. However, it's too early to recommend selenium supplements for everyone. Eat foods rich in selenium, and if you take a multivitamin, make sure it contains some selenium, preferably an organic form from yeast.

Full Article, Wellness Letter, June 2000

Does this mineral prevent cancer?

In the search for nutrients that might prevent cancer, selenium has recently taken on a certain star quality. Selenium is a trace mineral found in many foods: we don't need much, a mere 55 micrograms (a microgram is one-millionth of a gram) daily, according to current estimates, but the little we do need is essential for health. Selenium is used in an array of important compounds in the body. A lack of selenium impairs the immune system, but high doses don't seem to improve immunity in healthy people. Among other functions, selenium acts as an antioxidant and appears to play a key role in reducing the risk of some cancers.

Research brings good news

As we reported in 1997, a study in the *Journal of the American Medical Association* showed that daily supplements of 200 micrograms of selenium reduced the risk of three cancers—prostate, colon, and lung—by 45 to 63%. Another study in the *Journal of the National Cancer Institute* measured selenium levels in toenail clippings (this is a reliable way to estimate selenium intake) sent to researchers by more than 30,000 men. Based on these estimates, men who had consumed about 160 micrograms of selenium daily cut their risk of prostate cancer by about 65%, compared with those consuming about 85 micrograms a day.

Other studies have suggested a link between high selenium intake and a reduced risk of lung cancer. And there's evidence that people who live in sections of the country where selenium levels in the soil are high have lower risks of cancers of the lung, breast, and digestive tract. In China a clinical trial found that eating selenium-enriched yeast

reduced the risk of liver cancer. Benefits against all cancers were found when, in another trial, people consumed selenium-enriched yeast fortified with vitamin E and beta carotene. According to Dr. Gerald Combs, Jr., of Cornell University, "there is perhaps no more extensive body of evidence for the cancer-preventive potential of a normal dietary component than there is for selenium."

So why don't the experts simply tell everybody to take selenium supplements?

First, earlier studies on selenium yielded inconsistent results. Some found it protective against certain cancers, but not always against the same cancers, and usually only in regions of the world (notably parts of China) where people have very low blood levels of selenium. Other studies found no protective effect. And still others found that the mineral can *increase* the risk of some cancers.

Second, though the benefits of selenium supplements have been shown in people who are deficient, nobody is sure that supplemental selenium will do you any good if your diet is supplying adequate selenium. And it's difficult, if not impossible, to calculate how much you do get from your foods.

Finally, selenium can be toxic at high doses. The highest daily intake considered safe is 400 micrograms. Higher levels of selenium can cause nausea, vomiting, hair loss, and tooth loss. Rather than protecting cells, too much selenium can damage them.

Where it's coming from

Selenium levels vary from one geographical region to another, so it's hard to predict how much selenium is in a given food—for example, flour. Grains, nuts (particularly Brazil nuts), chicken, meats, and seafood are all very good sources of selenium. Fruits and vegetables don't contain much. A small serving of red snapper (3 ounces) averages 150 micrograms, and of beef, 33 micrograms. But foods are shipped all over the country, and indeed all over the world, so it's hard to know whether your food comes from a selenium-rich environment or not. Experts in the United Kingdom are worried, for example, because they have recently been importing selenium-poor flour from Europe rather than selenium-rich flour from North America. Prostate cancer rates have increased in England and Wales during this period, but no one is sure that reduced selenium consumption caused this.

Dr. Edward Giovannucci of the Harvard Medical School believes that the evidence for selenium's benefits in reducing prostate cancer risk is strong enough that public health officials should encourage people to increase selenium intake now. As he points out, it is nearly impossible for any one of us to know how much selenium we consume, so it may be time for the government to consider fortifying certain foods.

What to do now

- Fish is an excellent source of selenium, so eat two or three servings weekly. (Of course, there are also other reasons to eat fish, including heart benefits.) Meats and poultry are good sources, but limit yourself to small portions and lean cuts.

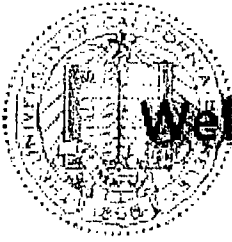
- Make whole grains part of your daily fare. Whole grains contain selenium, as well as fiber, vitamins, and other minerals.
- Brazil nuts are a great source. Other nuts have small amounts. Nuts, despite the many good things they contain, are very high in fat and calories, so stick to small portions.
- Here's another reason to take vitamin E supplements (as we've long advised): they work with selenium and increase its effectiveness in the body.
- We don't recommend separate selenium supplements. If you do take them, don't go over 200 micrograms a day. And be sure the supplement you take is an organic form of selenium from yeast—not sodium selenite. Multivitamins offer anywhere from 20 to 200 micrograms. Check the label to make sure its selenium comes from yeast.

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Soy isoflavone supplements

Claims, Benefits: A "natural" way to replenish the aging body's declining estrogen levels and thus relieve menopausal symptoms, such as hot flashes, as well as decrease the risk of heart disease and osteoporosis, without promoting breast cancer.



Bottom Line: You don't know what you're getting in these supplements—or even what would be a good formulation. And if you did know what's in the pills, you couldn't tell what they would do in your body. It's risky business. Stick with soy foods.

Full article, Wellness Letter, January 2001:

Soy: Food, Not Pills

In our article on tofu in August we said that soy is good food, but that you shouldn't take supplements made from isolated soy components, particularly isoflavones. Many readers have asked us why not. The simple answer is that you don't know what you're getting in these supplements—or even what would be a good formulation. And if you did know what's in the pills, you couldn't tell what they would do in your body. Here are more details.

Soy supplements are widely promoted as a "natural" way to reduce menopausal symptoms such as hot flashes, and for other proposed health benefits—especially for women who don't want to eat soy foods regularly. Among the substances found in soy (and in certain herbs, grains, and seeds, notably flaxseed) are chemicals known as phytoestrogens (plant estrogens). These are supposed to replenish the aging body's declining estrogen levels and thus relieve menopausal symptoms, as well as decrease the risk of heart disease and osteoporosis, without promoting breast cancer. At least that's the theory.

Note: By "soy supplements" we mean capsules and pills—not soy powders or soy concentrates, which contain relatively low levels of isoflavones per serving.

Why it's so unclear

Notable among phytoestrogens is a group of substances called isoflavones. Two of the primary soy isoflavones, genistein and daidzein, are found in many supplements. These

may indeed affect the risk of cancer, especially breast cancer. But for better or worse?

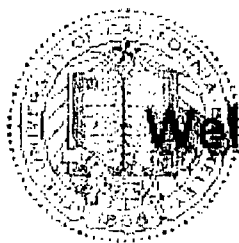
- **Conflicting results.** Almost all of the research on isolated isoflavones has been done on animals or in the test tube. Some animal studies suggest that these substances may help maintain bone strength and inhibit certain cancers. Other studies suggest that it isn't the genistein and daidzein—perhaps not any of the isoflavones—but something else in soy that provides these benefits. And then there have been other studies into various proposed health benefits of soy or soy compounds that have not found a positive effect. Some research has found that the isoflavones may inhibit thyroid function. But no one knows how these animal and test tube studies relate to humans.
- **Estrogen-boosting or estrogen-blocking?** Though theories about what they do are speculative, isoflavones have potentially contradictory effects. They can act both as estrogens and as anti-estrogens. One theory is that in premenopausal women, who have high hormone levels, phytoestrogens may act as anti-estrogens—that is, block some effects of estrogen—and thus protect against breast cancer (now thought to be promoted by high lifetime estrogen exposure). But after menopause, when estrogen levels are lower, phytoestrogens may act like estrogens, thus relieving hot flashes and other symptoms. It's unknown how potent these phytoestrogens are—far less potent than regular estrogen, certainly.

Exactly what effect concentrated isoflavones have remains unclear. And that's a concern. If you got an estrogen-boosting effect when you wanted an estrogen-blocking effect, for example, you could end up raising your risk of breast cancer. These complexities are seldom mentioned by advocates of soy supplements.

Another problem, hardly ever discussed, is the variable amounts of isoflavones in soy supplements, and how these differ from the levels in soy foods. The amounts of isoflavones listed for some pills are so small as to probably have no effects at all. But the pills may contain much more, or much less, than the label states, since there's no regulation. In any case, no one knows how much you would need to get a benefit, if there is one, and how much would be too much.

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Keep in mind: Soy foods are well worth adding to your diet, since they may help reduce the risk of heart disease (see Wellness Letter, February 2000) and may have other health benefits. But supplements containing concentrated isoflavones are another matter. No one knows what the long-term effects are. Proponents and marketers of the supplements don't mention all the unknowns and the possible adverse effects. If isolated isoflavones have unpredictable hormonal actions in the body, that's risky business. Pregnant or nursing women, in particular, shouldn't risk taking isoflavone supplements. In contrast, people have been eating soy foods for centuries, and there's good evidence that these are healthful.



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Tocotrienols

Claims, Benefits: A better form of vitamin E, the best way to lower cholesterol and protect the heart and arteries.

Bottom Line: The research in humans has been very limited, and the results conflicting. No one knows how much you should take, or which supplement is best. Do not stop taking regular vitamin E (tocopherols) capsules.

Full Article, Wellness Letter, October 1999:

The other vitamin E's

Since 1994 the WELLNESS LETTER has recommended that everyone take a daily supplement of vitamin E for its potential cardiovascular (and other) benefits. But things are not so simple. As we've discussed, "vitamin E" is not a single substance, but eight related compounds. Four of these are called *tocopherols*; of these, alpha-tocopherol is best known, being the main type in the body and in supplements. The other four forms of E are *tocotrienols*.

Researchers around the world are investigating the different biological and antioxidant effects of these various forms of vitamin E. Meanwhile, some experts are already recommending tocotrienols, which are now turning up in supplement form, under such names as EvolveE. These capsules are being loudly promoted as the best way to lower cholesterol and protect the heart and arteries. *Should you take tocotrienols?*

What the studies show—and don't show

Tocotrienols and tocopherols are nearly identical chemically, but have important molecular differences that affect their functions. Tocotrienols occur naturally in cereal brans (such as barley, rice, and oats). Studies have shown that these foods can lower cholesterol, and their tocotrienol content may be one factor in this. Tocotrienols are also found in palm oil.

Some animal studies have found that tocotrienols can lower blood cholesterol. These substances presumably prevent the synthesis of cholesterol in the liver. In contrast, tocopherols (that is, what's in regular vitamin E capsules) don't lower cholesterol, but as antioxidants they help protect against heart disease by preventing the oxidation of LDL ("bad") cholesterol. (Oxidation makes LDL more likely to promote the buildup of fatty plaque in artery walls.) Tocotrienols are also powerful antioxidants: in fact,

alpha-tocotrienol is far more powerful than alpha-tocopherol, at least in the test tube. In addition, test-tube studies suggest that tocotrienols, like tocopherols, reduce blood clotting.

The research in humans, however, has been very limited, and the results conflicting. Two studies found that tocotrienol supplements have beneficial effects, while three found none. For instance, one study found that large doses of tocotrienol supplements lowered LDL cholesterol by 10%. But the most recent study, a Dutch one in the American Journal of Clinical Nutrition in February, found no beneficial effects on the blood.

Wait for more answers

Many questions about tocotrienols remain unanswered:

- What's in the tocotrienol supplements on the market? Most are made from rice-bran oil, some from palm oil. Some also contain tocopherols. *Which formula will lower cholesterol?* EvolveE contains a substance called P-25 that is made from rice bran via a patented process. Despite the claims, there is nothing "natural" about P-25. In fact, it is more like a drug than a dietary supplement, one whose safety and efficacy have never been tested.
- How much should you take to get the proposed benefits? The studies have used much larger doses than the labels recommend.
- Is it okay to take tocotrienols *and* tocopherols? Some scientists claim that tocopherols may negate some of the benefits of tocotrienols. The interactions are unclear. Does that mean you would have to stop taking your regular vitamin E capsules?

What to do

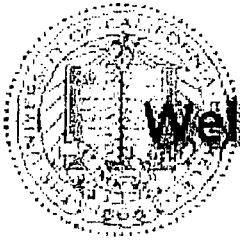
It would be a serious mistake to stop taking regular vitamin E capsules. Vitamin E has many functions not performed by tocotrienols. The WELLNESS LETTER continues to recommend 200 to 800 IU of vitamin E a day, preferably "natural" tocopherols (see last month's issue). At this point, there's no evidence that tocotrienols would be a better option. If, despite the many unanswered questions, you decide to take tocotrienols, remember that they can't take the place of your other vitamin E capsules.

If you have elevated cholesterol levels and haven't been able to lower them via diet and other life-style changes, talk to your doctor about proven, well-studied cholesterol reducers: "statin" drugs (see WELLNESS LETTER, August 1998) or the dietary supplement Cholestin, which is also a "statin."

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And by the way: Another way to get tocotrienols is simply to eat wheat bran, wheat germ, barley, oat bran, and rice bran, which contain other healthful substances as well.

UC Berkeley Wellness Letter, October 1999



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Valerian

Claims, Benefits: Herbal sleep aid.

Bottom Line: This mild tranquilizer has a long history of use. Nobody has discovered which element in the plant might produce the sedative effects, so valerian is hard to standardize. It may help you fall asleep, but may not improve the quality of sleep. Don't combine it with alcohol, tranquilizers, or barbiturates.

Full Article, Wellness Letter, August 1999:

Valerian vs. Valium

Sleeping potions are as old as insomnia—ancient herbalists and poets alluded to the soporific qualities of poppies and mandrake root, for example. Shakespeare spoke several times of sleep-inducing herbs. Valerian, a popular herbal sleeping pill today, was known as a medicinal plant in Roman times and takes its name from an ancient Roman province. The dried roots of this plant (*Valerianae radix*, also known as heliotrope) can be brewed for tea, and valerian root is also sold as a tincture (combined with a small amount of alcohol), in tablets, and as capsules. Some people add it to bath water and apply it to their skin.

Will it help you sleep?

Research results have been unclear. In some experiments a dose of valerian before retiring seems to reduce the time it takes to fall asleep. But it has yet to be shown in a well-designed trial that valerian improves the quality of sleep, once you conk out. Nobody has yet discovered what element in the plant might produce the sedative effects, if any. Some component of valerian may have an action on the brain similar to that of tranquilizers like Valium and Halcion—but a milder effect less likely to produce habituation or dependency. Valerian has proved toxic in one animal study. It can produce such side effects as headaches, palpitations, and nausea. Dr. Varro Tyler, the American herbal expert, regards it as a "mild tranquilizer."

Commission E, the agency that officially evaluates herbal remedies in Germany, regards valerian as safe and effective for treating "restlessness and sleeping disorders brought on by nervous conditions." But the U.S. Pharmacopeial Convention says there's inadequate scientific evidence to support valerian's use, though it recognizes its long history and calls for further research. No method has been developed for standardizing dosages of the herb.

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What to do: If you suffer from severe insomnia, consider getting medical advice. If you want to try valerian, remember that it's unregulated and unstandardized—so the preparation you buy may supply more or fewer milligrams of valerian than it promises, or none at all. The tea or baths, by the way, are unlikely to have much effect. In any case, don't use valerian for more than two weeks. Pregnant and nursing women and children should avoid it. It's not a good idea to combine it with alcohol, tranquilizers, or barbiturates. See our April issue for suggestions on dealing with insomnia. A glass of warm milk and a relaxing bath at bedtime might be your first line of defense.

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Vanadyl Sulfate

Claims, Benefits: Treats or cures diabetes.

Bottom Line: Some studies show that large doses may help regulate blood sugar. But not all diabetics respond, and very large doses are needed. It's too early to recommend it. If you do take it, tell your doctor so that its effects can be monitored.

Full Article, Wellness Letter, December 1998:

Ask the Experts

Q: Can vanadyl sulfate be used to treat diabetes?

A: It's too early to recommend it. Certainly, if you're a diabetic, don't believe claims that massive doses of vanadyl sulfate can cure the disease and/or replace your medication or insulin. Be sure to tell your doctor if you do take this supplement so that its effects (good or bad) can be monitored.

Vanadyl sulfate is a form of the element vanadium; it is 19% vanadium. Vanadium is an "ultratrace" mineral—so named because it's needed in minuscule amounts. There is no official recommended intake for vanadium, but the amount generally suggested is 5 to 10 micrograms (a microgram is one-thousandth of a milligram). Most people easily get this much from food, especially from whole grains, shellfish, mushrooms, and soy. There's no evidence that Americans are deficient in vanadium.

Some interesting research, mostly in diabetic rats, shows that large doses of vanadium may help regulate blood sugar. The limited, preliminary studies on humans with Type 2 diabetes have confirmed some of these results. But not all diabetics respond, and very large doses—100 to 125 milligrams of vanadyl sulfate a day—are needed. Such doses would supply more than 1,000 times the suggested intake of vanadium.

Though side effects are uncommon, such large doses can cause cramping and diarrhea. No one knows what the long-term effects may be.

Vanadium given in these doses must be considered a drug. And as such, it should be regulated by the FDA and taken only with the advice of a doctor.

UC Berkeley Wellness Letter, December 1998



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Vitamin B12

Claims, Benefits: Prevents confusion and memory loss in older people, protects the heart, peps you up.

Bottom Line: This vitamin is important to life and health, and to almost every cell and system in the body. It may help prevent heart disease. Older people may be deficient, especially if their diet is not good. A rare kind of deficiency can result in pernicious anemia, which needs to be treated with B12 injections. We recommend 6 to 15 micrograms daily for older people. If you take a multivitamin, that should provide enough.

Full Article, Wellness Letter, March 1999:

B12: don't B deficient

As new research has emerged in recent years, the experts have become more concerned about vitamin B12, especially for older people. You may know people who get occasional injections of B12 from their doctors to "pep them up." Such injections are usually a waste of time and money—unless you have been diagnosed as having pernicious anemia (see below).

It's true that B12 is important to life and health, and to almost every cell and system, including the blood and the nervous system. And as we reported in 1997, B12 and other B vitamins such as folic acid and B6 may be crucial in preventing heart disease.

The liver is able to store large amounts of vitamin B12, and even if you stopped consuming it altogether, you would not become deficient for months or years. But as has been discovered fairly recently, certain changes in the digestive tract that occur in older people can affect the ability to absorb vitamin B12. Separating B12 from food is a complex chemical process. The stomach must secrete adequate amounts of acids plus the digestive enzyme pepsin, and then the free vitamin must combine with a protein known as "intrinsic factor," secreted by the stomach lining, in order to be absorbed.

Two forms of B12 deficiency

The most serious kind of deficiency is called pernicious anemia—fortunately a rare condition. The more common kind of B12 deficiency gradually affects people over 50 who do not secrete enough stomach acids and pepsin, so that less of the vitamin is extracted from food and thus less is absorbed. The presence of *H. pylori*, the

bacterium that causes most ulcers, can also adversely affect vitamin B12 absorption. In some cases, the diet may be deficient, too. Vegans (who eat no animal products, which are the best source of this vitamin) can be deficient, and so can heavy drinkers, those with diseases of the intestinal tract, those who've had extensive intestinal surgery, and those taking certain drugs for gout or seizures.

What's normal, what's not

Reduced absorption of vitamin B12 is not inevitable in older people. Deficiency may cause no symptoms at all and thus will be difficult to diagnose. The National Academy of Sciences estimates that up to 30% of people over 50 produce insufficient stomach acid, and thus their B12 absorption is reduced. There's a lot of controversy over all this, as well as over how best to test for deficiency. The best methods probably are blood tests for elevated levels of methylmalonic acid (or MMA, a compound associated with B12) along with low levels of the vitamin itself.

One danger posed by B12 deficiency is misdiagnosis. Severe deficiency may cause such symptoms as tingling and weakness in the arms and legs, confusion, memory loss, hallucinations, listlessness, and stomach pain. This may look like Alzheimer's or some other condition. If you or someone in your family is being tested for symptoms like these, especially if dementia is suspected, make sure the doctor also tests for vitamin B12 deficiency. Levels of B12 can be brought back up to normal in various ways, including pills, nasal gels, and injections.

What to do if you're over 50

The majority of people won't become deficient in vitamin B12 as long as they consume moderate amounts of dairy products, fish, poultry, meats, and/or fortified cereals. If you take a multivitamin, that should also protect you. The RDA for B12 is 2.4 micrograms, which is easy to get from food. *We recommend 6 to 15 micrograms daily for older people.* Most multivitamins have at least 6 micrograms; fortified foods also help. In a supplement the vitamin is not bound, as it is in foods, and thus is more easily absorbed. Fortified foods also release the vitamin more easily, because it is simply added to the foods, not bound with food molecules. A few multivitamins, especially those designed for the elderly, contain up to 25 micrograms of vitamin B12—that isn't a problem.

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Remember this: If you get your B12 from fortified foods or a supplement, it will be readily absorbed, unless you have pernicious anemia. Don't waste your money on injections "just for good measure" or for "extra energy" without a diagnosis of a deficiency. Oral supplementation, via a multivitamin and fortified foods, is all most older people need.

Pernicious anemia: rare but serious

Only about 1% of us will ever develop the vitamin B12 deficiency disease called pernicious anemia. It can occur at any age, not just in those over 50. What happens is that the stomach nearly stops producing acids and intrinsic factor, and thus virtually no

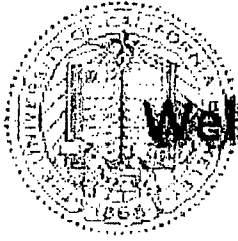
B12 can be absorbed. Because the vitamin is stored so efficiently, it may take up to five years before stores are used up and symptoms develop. These may include extreme fatigue, dementia, disorientation, and weakness in the limbs. One consequence may be irreversible neurological damage, so it's important to see a physician early. A high intake of another B vitamin, folic acid, can mask some signs of pernicious anemia, but does not stop the neurological damage. If your problem turns out to be pernicious anemia, it can be successfully treated with vitamin injections.

UC Berkeley Wellness Letter, March 1999

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Wellness Guide to Dietary Supplements

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Vitamin C

Claims, Benefits: Prevents or cures colds; may help prevent cancer, heart disease, and cataracts.



Bottom Line: This powerful antioxidant may protect against chronic diseases. It is not a cold cure, but may reduce symptoms. Get as much as possible from fruits and vegetables, which also contain other beneficial substances. Take 250 to 500 milligrams daily as a supplement.

Full Article, Wellness Letter, May 2000:

Vitamin C: We Still Take it, and So Should You

The question most frequently asked by visitors to our new website concerns vitamin C. Does it prevent heart disease or cause it? Is it still okay to take supplements? All this uncertainty among the health-conscious public has arisen from press reports about new findings presented at the March meeting of the American Heart Association.

Dr. James Dwyer of the University of Southern California and his colleagues measured the thickness of the wall of a major artery in the necks of 573 healthy middle-aged people at the beginning of the study and 18 months later, as well as questioning them about their vitamin C intake over the previous year. Those who took more than about 200 milligrams of C supplements daily experienced a greater rate of arterial thickening. This led Dr. Dwyer to speculate—and many news reports to conclude—that vitamin C may promote early atherosclerosis (thickening and narrowing of the arteries, leading to heart attack and stroke).

Here's what we make of this:

- Though Dr. Dwyer himself believes you should not take vitamin C supplements except on a physician's advice, he states that this new evidence is preliminary and merely suggestive. Whatever the press may have made of it, this study has not yet been published. The summary of the study provides incomplete data and leaves many crucial questions unanswered. For example, what was the degree and nature of the thickening? Would it have continued with further vitamin C use? Would coronary arteries show the same thickening? When the study appears, we'll look carefully at it.

- A single study of this kind (it was not a clinical trial) is not sufficient evidence for a recommendation one way or the other. Further work is needed.
- Many good studies show that vitamin C has potential benefits against cancer, heart disease, cataracts, and other disorders. This is the first report of an effect on arterial walls. In fact, long-term studies have never demonstrated serious harm from vitamin C, as would be expected if this were a real problem.

We're sure enough of this evidence to recommend a diet rich in vitamin C, as well as a daily supplement of 250 to 500 milligrams daily. And if you take C, take E supplements, too, since they work together.

Science advances via such investigations as Dr. Dwyer's. But for now we see no reason to worry that vitamin C is harmful. We'll keep you posted.

UC Berkeley Wellness Letter, May 2000

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Full Article, Wellness Letter, July 1998:

Vitamin C under attack

In 1994 the WELLNESS LETTER began recommending vitamin C and E supplements because of the accumulating research about the protection these antioxidants potentially provide against heart disease, cancer, and other chronic disorders. Since then the evidence about antioxidants, particularly these two, has only strengthened. But scientists have also learned more about how these potent substances can, under certain circumstances, cause some of the same cellular damage they can protect against. Thus when a recent one-page study in the journal *Nature* suggested that vitamin C pills might cause genetic damage, it attracted the attention of scientists around the world. It also received intense, and uncritical, media coverage-on the basis of which, unfortunately, thousands of people may have discarded their vitamin C pills.

In this small English study, 30 people took 500 milligrams of vitamin C daily for six weeks. The researchers took blood samples before, during, and after the six-week period and examined the DNA of the white blood cells. They concluded that there were signs of genetic damage (suggesting a potentially increased risk of cancer), presumably the result of free radicals created by the vitamin C pills.

Many leading scientists in the field have pointed out the serious flaws in the study. According to Dr. Bruce Ames, an expert in antioxidant research at UC Berkeley, "there are 10 things wrong with it." Most important, because of the particular methods used in the study, he says, the researchers themselves may have created 90 to 99% of the genetic damage when they ground up the cells to examine the DNA. That may help explain why the researchers found levels of damage 100 times greater than those found

in some similar studies, states Dr. Ames.

There is no evidence that vitamin C can cause genetic damage, let alone cancer. Numerous studies show that this vitamin has potentially beneficial effects. Indeed, many studies suggest that it may prevent certain cancers. If a daily 500-milligram C pill could cause genetic damage, so would drinking a daily quart of orange juice, since synthetic and natural C are exactly the same.

The WELLNESS LETTER continues to recommend a daily vitamin C supplement of 250 to 500 milligrams, *in addition to fruits and vegetables* rich in C and other antioxidants. *For more about antioxidants in general, see "Can antioxidants save your life?" in this issue.*

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Full Article, Wellness Letter, December 1995:

Was Linus Pauling right?

Vitamin C became widely known as a potential weapon against colds in the 1970s, after Linus Pauling (one of the great scientists and social activists of this century, who died last year) claimed this in a bestselling book. In recent years, despite Pauling's work, most researchers have concluded that megadoses of vitamin C are useless in preventing colds and, at best, only marginally helpful in alleviating cold symptoms. But a Finnish report, published earlier this year in the *Journal of the American College of Nutrition*, has lent new support to Pauling.

The researchers criticized an influential 1975 analysis that had concluded that C was virtually useless against colds. After reevaluating the early studies done on the subject and adding some of the more recent controlled studies, they concluded that taking 1 to 6 grams of C a day *reduces the severity of cold symptoms by an average of 21% and shortens the duration of the typical cold by about one day.* That's still not a big deal. Moreover, less than 1 gram, they said, didn't show a consistent or significant effect against colds.

A gram (or 1,000 milligrams) of vitamin C—let alone 6 grams—is a lot, considering that the RDA is only 60 milligrams. The WELLNESS LETTER has recommended 250 to 500 milligrams of C a day for its potential antioxidant effects. Studies have shown that even in very high doses (more than 3 grams), vitamin C is quite safe, since the body excretes the excess. Still, several grams of it can cause diarrhea, and there are unresolved questions about the effect on iron metabolism and nutrient balance in the body at these levels, as well as about the possibility of kidney stones.

Thus, we can't recommend *long-term* use of more than 500 milligrams a day of vitamin C. *Nearly everyone agrees now that vitamin C can't prevent a cold. But if you feel a cold coming on, it can't hurt to increase your intake of C for a few days—it may help*

alleviate symptoms. If you do take extra C pills, divide your dose in half and take them twice a day. Since the body eliminates C in about 12 hours, this will keep blood levels high throughout the day and reduce the risk of diarrhea and other gastrointestinal problems.

Remember to get some of your extra C from fruits, vegetables, and juices, since the foods also contain other nutrients and substances that help keep you healthy.

UC Berkeley Wellness Letter, December 1995

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Wellness Guide to Dietary Supplements

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Vitamin D

Claims, Benefits: Keeps bones strong, prevents some cancers, benefits the immune system.

Bottom Line: This vitamin is a hormone and is manufactured in the body. It helps the body utilize calcium and phosphorus and builds bones and teeth. Preliminary research suggests it may reduce the risk of breast, prostate, and colon cancer. You don't actually need to consume it, if you get a minimal amount of sunlight. Still, many people, especially those over 60, are deficient in vitamin D for several reasons. For them, the best choice is a multivitamin supplying 400 IU of vitamin D.

Full Article, Wellness Letter, December 1998:

The best D-fense

Does vitamin D, or the lack of it, have anything to do with breast cancer? With prostate cancer? An interesting new theory says it may. Mortality rates for both cancers are lower in regions where sunlight is most plentiful. Since sunlight is responsible for producing vitamin D in the human body, researchers have wondered if this could be the connection. Some test-tube studies have shown that vitamin D inhibits the growth of cancer cells, including those in the breast and prostate.

Last year a research team at the Northern California Cancer Center analyzed statistics from a survey of a large group of American women and found that women with higher sun exposure and those with a high dietary intake of vitamin D had a lower risk of breast cancer. This was backed up by a study from the University of North Carolina at Chapel Hill.

Any news that might help unravel cancer mysteries is welcome, but this is very preliminary research. Some evidence also points to a link between vitamin D and reduced risk of colon cancer. But all this does not mean you should move south or start sunbathing.

What is this thing called vitamin D?

Unique among the vitamins, vitamin D is a hormone, and like other hormones it is manufactured in the body. It helps the body utilize calcium and phosphorus and builds bones and teeth. Like many other nutrients, it probably has a beneficial effect on the immune system. You don't actually need to consume vitamin D, provided you get a

minimal amount of sunlight, which causes your skin cells to manufacture the vitamin.

Some groups of Americans, especially those over 60, tend to be deficient in vitamin D. Thus, last year the Food and Nutrition Board of the National Academy of Sciences revised its vitamin D recommendations upwards for older people: while those under 50 need only 200 IU (international units) daily, those 50 to 70 should get 400 IU, and those over 70 need 600 IU.

If you get even 10 or 15 minutes of sunlight on your arms and face two or three times a week, you will probably manufacture enough vitamin D to meet your needs. And because it is a fat-soluble vitamin, you can store enough to supply you in the days, or even months, when you don't get any sun exposure.

Nevertheless, it's a good idea to drink milk—for many reasons, among them that milk is fortified with vitamin D. Each cup contains 100 IU. Other foods containing vitamin D are fatty fish such as salmon and sardines, egg yolks, and fortified breakfast cereals. (Yogurt is *not* made from fortified milk.) Too much vitamin D can be toxic, but it's nearly impossible to get too much from food, and it is impossible to get too much from sun exposure.

Is geography a problem? Skin type?

Your ability to make vitamin D from sunlight varies according to your location and the time of year. According to Dr. Michael Holick, an expert in vitamin D at Boston University Medical Center, those who live at a latitude of 42° (a line that runs through Boston, Detroit, Chicago, the middle of Iowa, and southern Oregon) can manufacture sufficient vitamin D from a minimal amount of sun exposure between April through October. That is generally sufficient, because you will store enough vitamin D for the winter. People farther south—in Washington, D.C., for example—can manufacture the vitamin from March through November. The darker Canadian winter may have six months or more when the sun isn't sufficient to manufacture D. But most Canadians (and those living in the northern U.S.) will be all right, particularly if they get some dietary vitamin D.

If you have dark skin, especially if you are African-American, you may need longer exposure to sunlight—perhaps up to twice as much as a light-skinned person—since skin pigmentation screens sunlight and reduces vitamin D production.

Is your age a problem?

As you grow older, your ability to manufacture vitamin D in the sunlight declines, and just increasing your exposure time won't do the trick. By the time you are 70, your vitamin D production is only 30% of what it was when you were 25. That's why you need to increase your dietary intake. Anyone over 60 who doesn't get adequate amounts of vitamin D from foods and also lacks sun exposure will need supplements. Those at highest risk are the homebound or institutionalized, as well as those living in the northern third of this country and in Canada. Vegans and others who don't drink milk may also need to take a supplement.

Supplements are tricky, however, because even small overdoses of D can be toxic,

leading to kidney stones, kidney failure, muscle and bone weakness, and other problems. Danger starts at 2,000 IU a day. *Nearly all documented cases of vitamin D toxicity were caused by supplements.* A daily multivitamin with 400 IU of vitamin D is usually the best solution. But it makes sense to discuss your risk of vitamin D deficiency with a health professional.

Sunscreen note

Sunscreen can reduce or even shut down the synthesis of vitamin D. This is a problem chiefly for older people, who are often more conscientious about using sunscreen than the young, but who also produce less D. Try to get 15 minutes exposure without sunscreen in the early morning or late afternoon, when the sun is less damaging. Then apply sunscreen if you plan to stay out longer, particularly if you are fair-skinned.

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Final word: You should consider taking 400 IU of vitamin D daily if you fall into one of the following categories:

- Housebound, get little sun.
- Vegan (consume no animal products, and thus no milk, eggs, or fish).
- Over 60, seldom get sun, and drink little or no milk.
- Over 70.

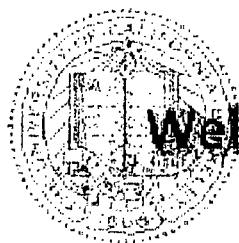
Best source: a multivitamin.

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Wellness Guide to Dietary Supplements

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Vitamin E

Claims, Benefits: Helps prevent cancer, heart disease, cataracts.

Bottom Line: This is a powerful antioxidant. The best evidence so far concerns the protective effect of large doses of vitamin E against coronary artery disease. Vitamin E is not plentiful in foods, so we recommend that you take a daily supplement of 200 to 800 IU.

Full Article, Wellness Letter, September 1999:

Vitamin E: is natural better?

Vitamin E, we are proud to point out, was discovered at UC Berkeley about 80 years ago. During the past decade it has been a star among nutrients, attracting increasing attention from both scientists and consumers. Since 1994 the WELLNESS LETTER has recommended that everyone take a vitamin E supplement (200 to 800 IU a day) for its potential cardiovascular and other benefits. So, not surprisingly, we get a lot of questions from readers about E, the most common being "What type of vitamin E should I take?" Another version of the question: "Is natural vitamin E a better choice than synthetic E?" Natural vitamin E, produced from vegetable oils, is more expensive.

With most vitamins, the body can't tell the difference between natural and synthetic. Vitamin E is the exception, since there are chemical differences.

Vitamin E supplements are measured in international units (IU), which represent vitamin E activity in animal tests. So 100 IU of synthetic E is *supposed* to be as potent as 100 IU of natural E. But this isn't necessarily true. This measurement is based on the vitamin's well-known biological functions (in reproduction, and in protecting muscle cells and red blood cells), not on its antioxidant function (the ability to protect against cell-damaging free radicals). *Recent studies have shown that natural E is not only better absorbed, but also better retained in the body than the synthetic form.* In effect, about twice as much of the vitamin ends up in the blood of people taking natural E as in those taking the same amount of synthetic E.

"Vitamin E" is actually eight related compounds. Four of these are tocopherols, named alpha, beta, gamma, and delta. The other four forms of E are called tocotrienols (see article).

Alpha tocopherol is by far the main type of E in the body. Natural E capsules generally

<http://www.berkeleywellness.com/supplements/dsSupVitaminE.html>

contain *d* -alpha tocopherol and/or "mixed tocopherols," which are also natural. Synthetic capsules are *dl* -alpha tocopherol. The "d" and "dl" signify slightly different molecular structures. (Tocopherols also come in "acetate" and "succinate" forms, which you may see listed on labels.)

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Words to the wise: Any form of vitamin E is worth taking, and if you're taking 200 to 800 IU a day, as we recommend, you'll get more than enough, whatever type you take. Most studies showing potential health benefits from E have used the synthetic form, which is cheapest and most widely available. However, if you have a choice, buy natural E. If the bottle doesn't say "natural," look for "d-alpha tocopherol" and/or "mixed tocopherols" on the ingredients list.

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Full Article, Wellness Letter, July 1997:

Taking vitamin E to heart

During the past two years, research has been accumulating about this vitamin E's potential benefits. Because of the increasingly promising news about vitamin E—generally in doses far too large to get from food—we continue to recommend vitamin E supplements (200 to 800 IU daily). A recent report from UC Berkeley researchers, however, raised some questions about which type of E pills should be taken (see below).

What makes vitamin E so interesting is its special antioxidant properties. In general, E helps mop up cell-damaging free radicals (as do vitamin C and carotenoids such as beta carotene). Vitamin E is the principal oil-soluble antioxidant; it works well with the carotenoids.

So much potential

The strongest and most consistent evidence so far concerns the protective effect of vitamin E pills against coronary artery disease (which leads to angina and heart attacks). In fact, of all nutrients with cardio-protective potential, the case is most convincing for vitamin E. For instance, a study last year from Cambridge University, published in *The Lancet*, found that E pills reduced the risk of heart attack by one-third. This vitamin may reduce the risk of heart disease because it prevents the oxidation of LDL ("bad") cholesterol. Oxidation—a process similar to that by which butter goes rancid—makes LDL more likely to promote the buildup of fatty plaque in coronary artery walls (atherosclerosis). This vitamin is uniquely able to protect LDL because it is carried in the blood by LDL itself. It may also reduce the blood's ability to clot, thus lowering the risk of atherosclerosis and heart attacks. In addition, E may be protective because it helps reduce inflammatory processes, which have been linked with coronary

artery disease.

Also strong is the research about E's role in bolstering the immune system, especially in older people. This was seen in a study from Tufts University, published in the *Journal of the American Medical Association* in May. Other studies suggest that vitamin E might help prevent or ameliorate a range of other diseases-certain cancers, arthritis, cataracts, Parkinson's, one kind of stroke, diabetes, and, most recently, Alzheimer's-but so far the evidence about these remains inconsistent or preliminary.

Four forms of E

Vitamin E is a generic term for a group of related compounds. It occurs naturally in four major forms-alpha, beta, gamma, and delta tocopherols. Alpha tocopherol is by far the main type in the body, as well as in supplements. Gamma is the main tocopherol in foods. Recently, Stephan Christan and other researchers in the laboratory of Dr. Bruce Ames at UC Berkeley showed that gamma is even more effective than alpha tocopherol in limiting damage to LDL in the test tube, as reported in the *Proceedings of the National Academy of Sciences* in April. The researchers suggested that alpha and gamma tocopherol actually play complementary roles, and that the two taken together may be more effective than either one alone.

This new research, while underlining the potential importance of gamma tocopherol, doesn't have much of a practical effect for consumers-at least not yet. Since the exact interactions and activity of the various forms of vitamin E are unknown, it's impossible to say what the optimal combination would be. In any case, gamma tocopherol isn't available commercially. A small percentage of supplements do contain a little gamma-these are labeled "mixed tocopherol." Remember, however, that nearly all of the studies showing health benefits from E have used simple alpha tocopherol pills.

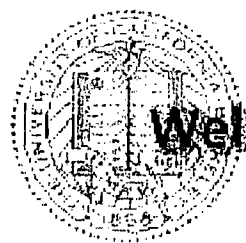
B(E)ware. The usually beneficial anti-clotting effect of vitamin E could pose a danger for people on blood-thinning medication (anticoagulants), according to some reports. If you are on anticoagulants or any other medication that may affect blood clotting, you probably shouldn't take E pills-but check with your doctor. Aspirin (as well as some other pain relievers) also has an anticoagulant effect, but usually not enough to make E a problem. However, if you're taking high doses of a pain reliever daily for chronic pain, talk to your doctor about the risk of taking E pills.

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Vitamin K

Claims, Benefits: Helps keep bones strong, essential for blood clotting.

Bottom Line: You don't need supplements of vitamin K. In most people, intestinal bacteria make much of the K needed. But to make sure you get enough K, especially to keep bones strong, you should eat vegetables rich in K.

Full Article, Wellness Letter, July 1999:

Greens for bones

Even Martians know that broccoli, cabbage, Brussels sprouts, spinach, kale, dark lettuce, and other leafy greens are nutritious—rich in vitamin C, folic acid, carotenoids (such as lutein and beta carotene), and fiber. But did you know that these vegetables may help keep bones strong? And this isn't merely because some of them contain calcium, but because they are the best sources of vitamin K, according to a study that appeared in the *American Journal of Clinical Nutrition* in January. This vitamin is needed to make a protein that's essential for bone formation.

Vitamin K is best known for its crucial role in blood clotting. In the great majority of people, beneficial intestinal bacteria make much of the K needed for this purpose, which is why you hear so little about this vitamin. But to get enough K, especially to keep bones strong, you need to eat some of these K-rich vegetables.

The new research comes from the ongoing Nurses' Health Study and followed 72,000 middle-aged women for 10 years. It found that those who consumed moderate or high amounts of vitamin K (nearly all from vegetables) had a 30% lower risk of hip fractures than women consuming little or no K. This held true even when other factors affecting bone health, such as calcium and vitamin D, were factored in.

It didn't take much vitamin K—about 100 to 150 micrograms a day—to achieve this protective effect. That is more than the RDA (65 to 80 micrograms), but can be supplied by the following: one-quarter cup of cooked kale or collards; one-half cup spinach, Swiss chard, chopped broccoli, or Brussels sprouts; or one cup green cabbage or leaf lettuce. You don't need K supplements.

The only people who should avoid large servings of green vegetables are those taking anticoagulant drugs such as Coumadin, which decrease blood clotting by inhibiting the action of vitamin K. Thus consuming high amounts of this vitamin can defeat the

anti-clotting action of the drugs. Despite what some nutrition textbooks and doctors say, brewed tea contains virtually no K.

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Second thoughts: Large doses of vitamin E (such as the doses the Wellness Letter recommends) impair the absorption of vitamin K somewhat. So it is important to make sure you eat some K-rich foods.

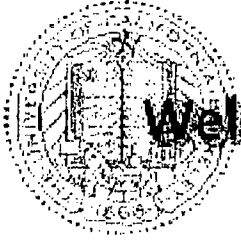
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Yohimbe

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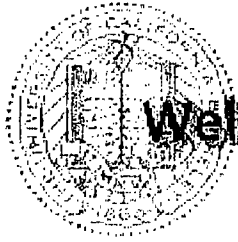
Claims, Benefits: Aphrodisiac, impotence cure

Bottom Line: Also called yohimbine, this dilates blood vessels. It has been shown to increase sexual arousal in rats. But it is unsafe and ineffective in humans, according to the FDA and the German Health Agency. More research is needed. Don't take it.

This information was part of a major article on herbal medicine in the WELLNESS LETTER, September 1997.

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Zinc

Claims, Benefits: Cures/shortens colds, relieves prostate symptoms, prevents eye disease, prevents taste disorders

Bottom Line: Zinc is an essential mineral for human health. There is no convincing evidence that zinc lozenges help fight colds. Zinc is not recommended for prostate problems. Its effects against macular degeneration are uncertain. Don't take zinc supplements, but do eat foods rich in zinc. There's no reason to exceed the RDA for zinc—15 milligrams daily—which is the amount in most multivitamins.

Full Article, Wellness Letter, October 1998:

Think zinc

It's been known for over a century that zinc is essential for health in both plants and animals. Zinc is an important fertilizer ingredient today and thus one factor in the agricultural productivity of our times. In humans zinc is essential for the enzymes that regulate cell division, growth, wound healing, and proper functioning of the immune system. Male children severely deficient in zinc will not develop sexually, though no such cases have ever been reported in this country. The mineral also plays a role in acuity of taste and smell.

Meats, seafood (especially oysters), and liver are the richest sources of zinc; brewer's yeast, milk, beans, and wheat germ also supply some. It occurs in water, too. Severe zinc deficiency is most often found in the developing world, but mild deficiencies may also occur elsewhere in undernourished people and those on strict vegan diets, which may not contain much zinc. Very high fiber intake can interfere with zinc absorption. Older people may not consume much zinc—but zinc absorption is not impaired by aging. The RDA (recommended dietary allowance) is 15 milligrams a day for men, 12 milligrams for women.

However, there are drawbacks and dangers in zinc supplementation. Most people don't need zinc pills. You'll get enough zinc on the semi-vegetarian diet we recommend, which is based on fruits, whole grains, vegetables, and low-fat or fat-free dairy products, plus small amounts of meat and fish.

Like other nutrients, zinc has been making headlines lately. Here are some frequently asked questions.

Does taking calcium pills interfere with zinc absorption and put you at risk for deficiency?

It may interfere with absorption, but there's no evidence this can lead to actual deficiency. If you take calcium supplements to help keep your bones strong but consume little or no zinc, you might need to take a multivitamin/mineral containing zinc. Most multivitamin/mineral pills contain 100% of the RDA for zinc. Minerals can compete with one another in the body, but taking calcium supplements should not result in zinc deficiency.

What's wrong with consuming a lot of zinc?

The zinc in foods can't hurt you, but supplementary zinc can be harmful. Taking large doses can interfere with the body's absorption of copper and iron, other minerals essential to immune function. Megadoses of zinc can impair formation of red blood cells and depress the immune system. In addition, they can reduce levels of HDL ("good") cholesterol. Even doses as small as 50 milligrams a day can have adverse effects, including nausea and gastrointestinal problems.

Can zinc prevent prostate problems and improve erections?

There's no evidence that it can. The prostate gland normally contains high concentrations of zinc, and it's true that a zinc deficiency can cause a drop in testosterone levels. But that doesn't mean that zinc pills will cure prostate problems or boost sexual performance. People have believed for centuries that oysters, a zinc-rich food, promote potency, but there is no evidence for this.

Can zinc prevent eye diseases?

Zinc may protect against age-related macular degeneration (a major cause of blindness in older adults), which is thought to result from damage to the retina by compounds called free radicals.

Zinc helps guard retinal tissues. One study suggested that people with high intakes of zinc from food have a lower risk for age-related macular degeneration. More studies are needed. It makes sense, for many reasons, to eat a zinc-rich diet. But it's too soon to take supplements in hope of preventing macular degeneration.

Can zinc prevent or remedy the common cold?

As we've reported (November 1996), zinc gluconate lozenges have made national news as a potential weapon against colds. The claim is that they reduce the duration of a cold by three days. Millions, perhaps billions, of these lozenges have been sold, though there have been serious questions about the research backing them. But the craze will no doubt die down. Studies conducted more recently have failed to show that zinc lozenges have any more effect than a placebo.

Can zinc cure taste disorders in older people?

Some taste disorders are caused by a zinc deficiency, but this seems to be uncommon—most taste disorders in the elderly are not caused by a zinc deficiency. In

some cases, a serious medical condition (such as liver or kidney disease) predisposes a person to both the taste disorder and zinc depletion. If you have a normal diet, it's highly unlikely that you're deficient in zinc, since the mineral is found in so many foods.

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Words to the wise: Don't take zinc supplements unless your doctor has prescribed them, but do eat foods rich in zinc. If you are taking high doses of calcium and are a vegan, consider taking a multivitamin/mineral supplement with zinc. (People over 65 may also want to take a multi for this and other reasons.) There's no reason to exceed the RDA for zinc—15 milligrams daily—which is the amount in most multivitamins.

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Full Article, Wellness Letter, November 1996:

Can zinc cure the common cold?

Zinc lozenges recently made headlines as a potential weapon against the common cold. A study at the Cleveland Clinic Foundation, published in *Annals of Internal Medicine*, showed that high doses of zinc (in the form of zinc gluconate lozenges) reduced the duration of many cold symptoms by about three days. Of 100 cold-sufferers in the study, half took four to eight zinc gluconate lozenges daily, for a total of 52 to 104 milligrams of zinc a day. They experienced symptom relief in four days, compared with 7.5 days for the other sniffers, who took a placebo. The theory is that zinc in the mouth and throat somehow deactivates cold viruses.

The lozenges were a brand called Cold-eeze, which has been sold by mail order since 1992. The manufacturer claims efficacy on the basis of an earlier study conducted at Dartmouth. There are no plans, according to a spokesperson, to submit these claims to the FDA. (The package boasts that the lozenges are "all natural," though there's not much that's natural about anything as highly processed as a lozenge.) The FDA should surely be evaluating these claims, and perhaps it will. But for the present, with nods from such prestigious heads as the publishers of the *New England Journal of Medicine* (in a recent issue of *Health News*), Cold-eeze claims it can win the cold war. Should you enlist?

First think about zinc

Like most other minerals necessary to human life, zinc has its good-guy/bad-guy aspects. Important to the immune system and to the senses of taste and smell, it is plentiful in water and in some foods, such as meat. Vegetarians and the elderly may not get enough. Millions of people take supplements. The recommended dietary allowance, or RDA, for zinc is 12 to 15 milligrams daily. More than this can interfere with the body's absorption of copper, another mineral essential to immune function. Megadoses of zinc can impair blood cell formation and depress the immune system. In addition,

[http://www.berkeleywellness.com/
supplements/dsSupZinc.html](http://www.berkeleywellness.com/supplements/dsSupZinc.html)

large doses can reduce levels of HDL ("good") cholesterol. Even as little as 50 to 75 milligrams of zinc a day can cause a significant drop in HDL. A few years ago, zinc made headlines as a possible promoter of Alzheimer's (though there's little evidence for this idea), and it's also been touted as a cure for impotence and prostate problems (again, no supporting evidence).

Taking megadoses of zinc over a long period is, of course, a far cry from taking them for the few days you have a cold. Still, common complaints in the zinc group in the Cleveland study were nausea, mouth irritation, and a bad taste in the mouth. Diarrhea, vomiting, and mouth sores have been reported in other short-term studies. But side effects will vanish when the zinc is discontinued, and perhaps people battling a bad cold would not mind risking nausea or mouth irritation. As for bad taste, the lozenges come in pleasant flavors and contain sugars (however, zinc lozenges sweetened with mannitol or sorbitol, or those containing citric acid, may not release much zinc).

But the Cleveland Clinic study and similar ones have many limitations. The Cleveland researchers themselves point out that they did not test for viruses, but relied solely on participants' subjective evaluations of whether they had a cold and whether the treatment alleviated symptoms. Prior zinc blood levels were not checked, and doses were not strictly monitored.

Seven other studies have looked at zinc and colds, and only three of them found zinc beneficial. Studies that looked at virus shedding (a sure sign that a cold is still present) have found no benefit from zinc. Doses, and types of lozenges, have tended to vary from study to study. Thus, from a scientific point of view, it's hard to endorse zinc lozenges.

The Cleveland researchers concluded that although zinc gluconate lozenges were helpful in reducing the duration of cold symptoms, "patients must decide whether the possible benefits of zinc on their cold symptoms outweigh the possible adverse effects." They did *not* encourage people to "run out and buy health-food preparations of zinc."

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And keep in mind: There is no evidence that taking zinc will prevent a cold—only that it may shorten the duration of some symptoms. Cold-eeze's promotion material advises consumers to "break it to Grandma gently" that they're going off chicken soup and switching to zinc. We say let Grandma (and Grandpa) stay at the stove a while longer.

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