

# HEALTHY EATING

NUTRIENTS / CONFIDENT COOK / HONESTLY, DARA / WORTHY GOODS

## When Nutrients Go Missing

Consuming an optimal mix of vitamins and minerals is one of the most important things we can do for our health. Here's how to augment your diet.

BY MATTHEW KADEY, MSc, RD

The news is out and the media are on top of the story: The majority of Americans are overweight. What's needed now — and is missing from most mainstream stories — is a nuanced discussion about diet and nutrition. It may seem counterintuitive, but many Westerners eat a calorie-rich diet that leaves them both overweight and malnourished.

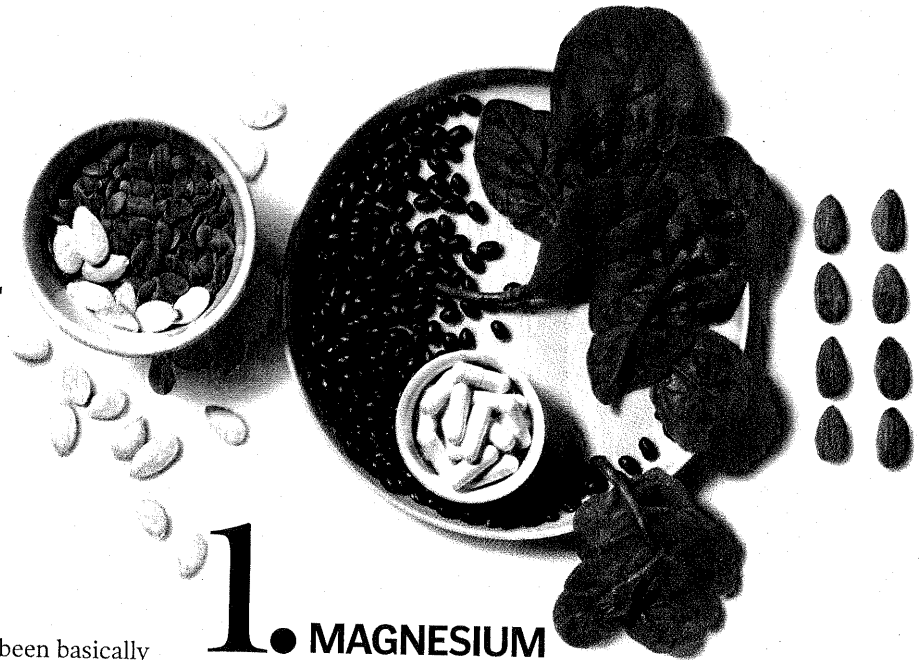
"Heavily processed foods full of refined flours and processed sugars provide plenty of calories but not a lot of nutrients," says nutrition expert Alan Gaby, MD. "In essence, we are overfed, but undernourished."

Macronutrients — fat, protein, and carbohydrates — are not the issue. Instead, it's the micronutrients — vitamins, minerals, and trace elements — that many of us don't get enough of. Sure, severe conditions classically attributed to vitamin deficiency, such as

scurvy, have been basically overcome, but Gaby and other experts are concerned that people who eat the standard American diet — which is heavy on processed foods and relatively low on veggies and fruits — are risking a health crisis of epidemic proportions. In the short term, Gaby says, micronutrient malnourishment can lead to low-level conditions like migraines, fatigue, and anxiety. Over an extended period of time, however, it can lead to more serious problems, from heart disease to osteoporosis.

The good news? By following a varied, whole-foods diet and supplementing judiciously, you can reverse your deficiencies and upgrade your health.

To get you started, our experts have identified five key nutrients that have gone missing from the American diet. So, in the words of Hippocrates, "Let food be thy medicine."



## 1 • MAGNESIUM

### ► Why you need it

Every cell of the body needs this essential mineral for hundreds of biochemical reactions, including energy production. For example, the molecule ATP (adenosine triphosphate) is the main source of cellular energy, but it must be attached to magnesium to be active.

Research shows that magnesium deficiency exacerbates inflammation, which can set the stage for cancer, stroke, and even type 2 diabetes (studies show that magnesium may help improve the sensitivity of our cells to insulin, thereby helping drive down blood-sugar levels).

### ► Reasons for shortfall

Magnesium is predominantly found in plant-based whole foods, and unfortunately most folks are eating a diet heavy in processed foods. On top of this, says Gaby, many people deplete their magnesium stores through chronic stress and the use of certain prescription medications.

More than half of all Americans are not consuming the minimum recommended amount of magnesium (400 to 420 milligrams daily for men; 310 to 320 milligrams daily for women). And, according to Gaby, there may be great benefits to exceeding the minimum.

### ► Get what you need

Legumes, whole grains such as quinoa and brown rice, dark leafy greens, seeds, and nuts are all good sources of magnesium. Gaby also prescribes a daily magnesium supplement (ranging from 200 to 400 milligrams) to ameliorate any symptoms or health conditions associated with a deficiency.

## 2. OMEGA-3 FATTY ACIDS

### ► Why you need it

Many folks tend to demonize fat and lump all varieties in the same category. But, not all fats are created equal. Long-chain omega-3 fatty acids — the most common being EPA and DHA — tamp down inflammation, which is at the root of most chronic diseases, especially those that strike the heart and the brain. (Hydrogenated fats, on the other hand, promote inflammation.)

In 2013, a Harvard study found that people with the highest blood levels of EPA and DHA cut overall mortality by 27 percent and mortality from heart failure by 35 percent. By fighting inflammation, says Michael Wald, PhD, ND, director of nutritional services at Integrated Medicine of Mount Kisco, N.Y., omega-3s can “lower your chances for depression and dementia, reduce cancer and diabetes risk, and improve joint health.”

### ► Reasons for shortfall

Humans evolved on a diet rich in cold-water fatty fish, such as wild salmon, sardines, and mackerel, as well as grass-fed meats. Today, few people regularly consume these sorts of omega-3-rich foods. The standard American diet compounds the deficiency because it contains a glut of grain-fed meats and cheap vegetable oils that have a lot of pro-inflammatory omega-6 fats. “High amounts of omega-6s crowd out omega-3s in the body and make them less effective,” Wald says. (So even if you pop fish-oil pills, your everyday diet could negate their positive effect.)

The typical American diet has a ratio of omega-6s to omega-3s hovering between 10:1 and 20:1. Wald says it needs to be much closer to even for optimal health. While an official DHA and EPA recommendation remains elusive, a recent *British Journal of Nutrition* study determined that 250 milligrams a day is the minimum amount needed to confer protection from cardiovascular disease. Wald, who takes a holistic approach, believes “the optimal dose could be up to 1,000 milligrams of DHA and EPA combined a day,” depending on your individual health history.

### ► Get what you need

Boost your DHA and EPA levels by eating a few servings of fatty fish each week. Pasture-raised meats and eggs are also good sources of omega-3s.

Vegetarians and vegans can nosh on seeds — such as chia, hemp, and flax — as well as walnuts. But the type of omega-3 fat in these foods, called alpha-linolenic acid (ALA), is not as potent as the longer-chain DHA and EPA forms found in seafood, says Wald.

Because of the critical importance of the omega-3 fats, Wald often nudges his patients (both vegetarians and meat-eaters) toward supplementation. When looking for a fish-oil supplement, be sure to consult a medical expert and sites like ConsumerLab.com, which conducts independent testing of supplements, in order to find a supplement that is free of mercury contamination. (Vegetarians and vegans can turn to an algae-based omega-3 supplement.)

## 3. VITAMIN E

### ► Why you need it

Vitamin E is a powerful antioxidant that helps destroy and neutralize free radicals, which are chemical compounds that accelerate aging and disease progression by damaging cells. Wendy Bazilian, DrPH, RD, author of *The SuperFoodsRx Diet* (Rodale, 2008), explains that many factors drive free-radical production in our bodies, including processed foods, excess sugar, environmental pollution, and chronic sleep loss.

Vitamin E also plays a role in maintaining a healthy immune system by thwarting bacterial and viral invaders and helping red blood cells, which deliver oxygen throughout the body, develop properly. And vitamin E can help fight cancer by blocking the activation of an enzyme that helps the disease survive.

### ► Reasons for shortfall

“Many of us eat a meat-rich, plant-poor, heavily processed diet. In refining grains, vitamin E levels suffer the most,” Bazilian says.

Though serious vitamin E deficiency is rare, scientists at Tufts University determined that only 8 percent of men and 2 percent of women are meeting their optimal vitamin E requirements, making it one of the greatest nutrient deficiencies in the American diet. Bazilian says 15 milligrams per day of vitamin E is a good number to shoot for if you are generally in good health.

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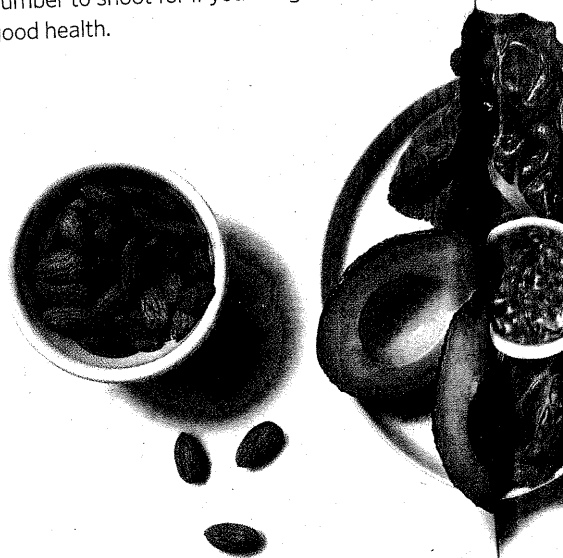
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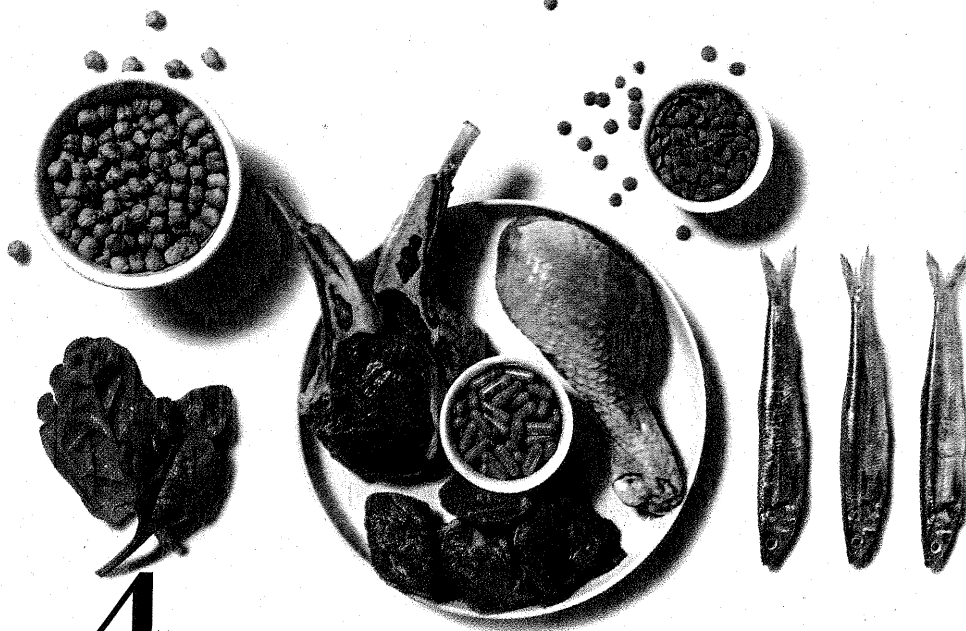


► **Get what you need**

You'll find vitamin E in foods containing fat, such as nuts, seeds, flax oil, olive oil, and avocados, as well as in whole grains and dark leafy greens, says Bazilian.

It's better to prioritize whole foods over supplementation when it comes to vitamin E, she says, because there are eight kinds of vitamin E compounds found in foods — all of them essential to our health — and many supplement manufacturers typically pack their products with only one form, called alpha-tocopherol. (Other forms like gamma-tocopherol appear to have powerful impacts on human health, such as helping fend off cancer.) "Taking high amounts of just one form of vitamin E may [cause] some health problems, including increased risk for internal bleeding and stroke," Bazilian says.

If advised by a medical professional to use supplemental vitamin E, Bazilian suggests looking for one that offers a variety of vitamin E forms to better mimic what real food provides.



# 4 • IRON

► **Why you need it**

Without iron, our red blood cells could not transport oxygen from our lungs to our cells throughout the body. Iron deficiency is most often associated with anemia, but it can cause problems long before it reaches that stage.

For example, a 2012 study in *Medicine and Science in Sports and Exercise* found that female athletes who had low blood levels of the iron-storing protein called ferritin had diminished energy levels, which compromised their training.

Less-than-optimal iron levels also directly affect the brain. Researchers at Penn State University found that women with even moderate iron deficiency scored more poorly on tests of memory, attention, and learning.

► **Reasons for shortfall**

Iron deficiency can be brought on by many different circumstances, including heavy menstruation, excess intake of processed foods, avoidance of red meats, and even regular participation in endurance sports.

A growing body of science also shows that obesity and inflammation (which usually go hand-in-hand) can raise levels of a hormone called hepcidin, which blocks proper iron absorption.

The recommended iron intake for adult women is 18 milligrams per day, and up to 27 milligrams during pregnancy. The daily quota for men is

8 milligrams. Cornell scientists have determined that about 16 percent of American women between 18 and 45 years old aren't meeting their iron needs.

► **Get what you need**

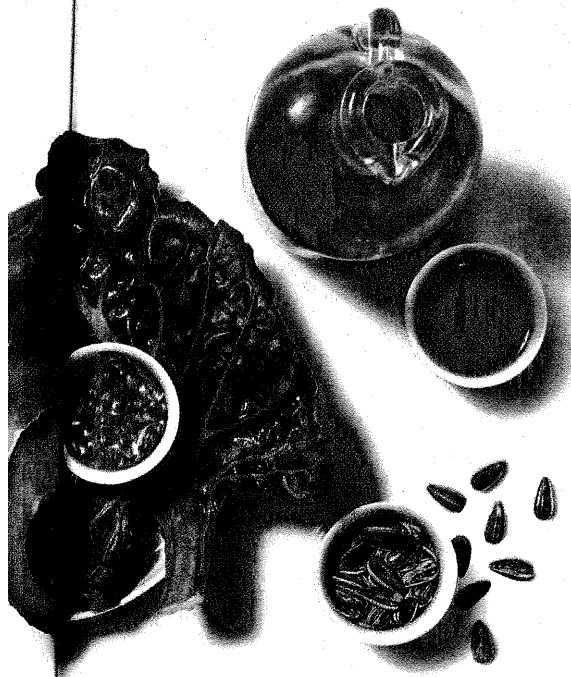
Iron supplementation can be tricky, so functional-medicine nutritionist Julie L. Starkel, MS, MBA, RDN, first recommends people get a blood test. If the test finds that ferritin levels are not low, Starkel suggests going the whole-foods route.

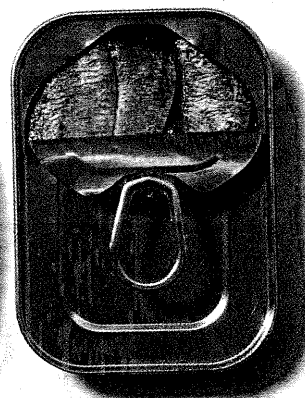
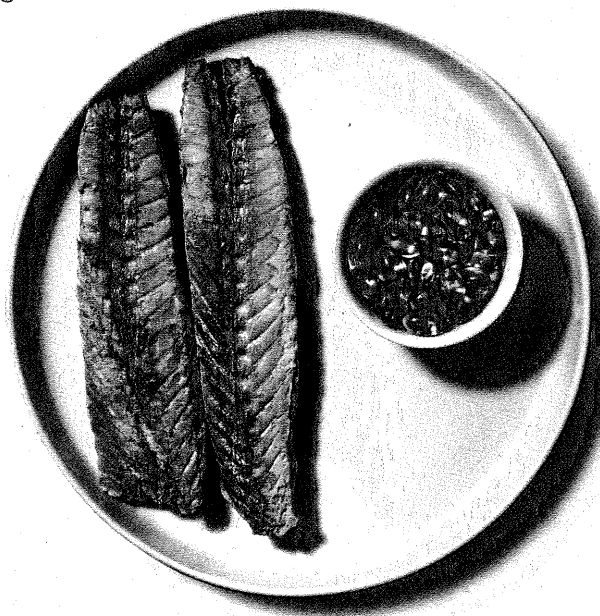
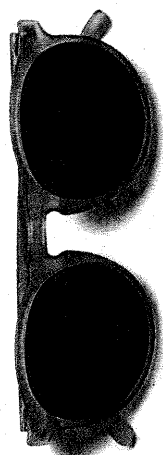
A note for vegetarians: Because non-heme iron, the form of iron found in plant-based whole foods like beans and lentils, is not as well absorbed as the heme iron (found in meat and fish), Starkel advises that eating these foods with "a source of vitamin C like fruits and vegetables significantly improves absorption rates."

If the test reveals low levels of ferritin, it's time to supplement. But, says Starkel: Excess iron is hard to eliminate, and too much of it can raise the risk for heart disease and other conditions.

Starkel recommends iron gluconate or iron glycinate supplements because they are less constipating, a common complaint among supplement users. She adds that it's best not to take your iron alongside dairy or a calcium supplement because iron and calcium compete for digestion.

Starkel often prescribes 25 to 50 milligrams of iron daily for those with depleted stores, followed by another blood test in three months to gauge success.





# 5. VITAMIN D

## ► Why you need it

In the past decade, studies have shown that vitamin D — long associated with aiding calcium absorption — helps fend off a wide array of ailments, including diabetes, depression, cancer, multiple sclerosis, heart disease, and chronic fatigue. The key, says Wald, is that vitamin D “behaves more like a hormone than a vitamin.” In fact, vitamin D is actually a hormone precursor that eventually turns into the hormone calcitriol, which attaches to more than 2,700 sites on the human genome and turns on more than 1,000 genes. Its importance cannot be overstated, says Wald: “It’s necessary for every single cell of every single tissue in the body to work optimally.”

## ► Reasons for shortfall

Humans produce vitamin D when they spend time in the sun, a process that Wald says is being increasingly compromised as we spend less and less time outdoors. Even when we are outdoors, we tend to slather on the sunscreen, which blocks our absorption of vitamin D.

Wald says fatty fish like sardines and mackerel contain high amounts of dietary vitamin D, but few people regularly consume enough of these fish. And while foods fortified with vitamin D, such as orange juice, milk, and cold cereals, are on the upswing, many experts like Starkel say that these foods usually don’t help increase your vitamin D intake. The form

of vitamin D in fortified foods, Starkel explains, is often vitamin D2, an inactive form that needs sunlight to activate it — a challenge for those living in cloudy locations or with limited time to spend outdoors. It is also fat-soluble, which means you need to eat fat to absorb the vitamin. So, if you’re gulping down fat-free orange juice or skim milk, you won’t absorb much of the fortified vitamin D it contains.

More than three-quarters of all Americans are deficient in vitamin D. The Institute of Medicine, a nonprofit organization that is the health arm of the National Academy of Sciences, recently raised its recommended daily vitamin D intake from 400 international units (IU) to 600 IU for most age groups. Wald and many vitamin D experts think that these revised recommendations still aren’t enough to overcome the epidemic of vitamin D deficiency gripping the country.

## ► Get what you need

Wald strongly believes that daily supplementation is the most reliable way to achieve optimal vitamin D levels. “You should get a baseline test of vitamin D3 (dihydroxy) from your doctor, with an ideal level being 75 ng/mL in the blood,” he says. Many multivitamins contain no more than 600 IU, so you’ll likely require a dedicated vitamin D supplement to overcome a deficiency. The supplemental dose Wald often recommends is 5,000 to 10,000 IU daily, or as much as 50,000 IU

daily, based on individual needs, such as the degree of deficiency or health status. “The risk for overdose is very low, particularly if you’ve had your levels tested,” says Wald.

Not everyone agrees, however, including Gaby, who thinks that excess amounts of fat-soluble vitamin D could accumulate in our bodies and raise the risk for conditions such as kidney stones and atherosclerosis. Gaby suggests a more modest 800 to 1,200 IU daily supplementation as an effective and safe dose for most people, although he does prescribe higher doses for short periods of time if he’s “trying to correct a deficiency rapidly.”

Regardless of the amount of vitamin D you consume, take heed of a 2010 study in the *Journal of Bone and Mineral Research*, which found that subjects who took their vitamin D supplements with the largest meal of the day increased absorption by about 50 percent. And look for supplements with vitamin D3, the more active form, which is better at boosting blood levels than the D2 form. (For more on how much vitamin D to take, see “The Vitamin D Debate” at [ELmag.com/vitamindebate](http://ELmag.com/vitamindebate).)

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