



## SUPPLEMENTS EXPLAINED



### ASK THE NUTRITIONIST

## Why take supplements?

**Q: If I am eating a well-balanced diet, why do I need to take supplements?**

**A:** Many people ask me why they need to take nutritional supplements. I well understand their confusion and resistance, especially in these demanding times. It's hard to justify spending our hard-earned dollars on supplements when we already spend plenty on good food. Vitamin tablets and capsules don't grow on trees, so one could easily argue that taking supplements is not natural. But neither is the polluted world we live in today.

*Teresa Kerr, RD, MA, is co-owner of Pioneer Nutritional Formulas, Inc. She has been a medical dietician in private practice for over 30 years.*

As recently as 100 years ago, you probably could get all of the necessary vitamins and minerals from food alone. But this is virtually impossible in this day and age, for two major reasons. The first of these is the diminished nutritional quality of the foods we eat. The second has to do with stress and its physiologically depleting demands. Continuous and extreme stress - both emotional and environmental - seems to go hand in hand with modern living, and our bodies need help to counter its detrimental effects.

### How well am I eating?

Many clients come to me believing that they eat quite well until we take a closer look by asking questions such as those outlined in the box below.

When you honestly answer these questions for yourself, you may discover that like many of my clients, your diet is not really as healthy as it might be. If this

is the case, you probably are not getting adequate amounts of at least some important vitamins and minerals.

### Poor food, poor nutrition

Because of modern agricultural methods and processing treatments, most food today is severely depleted in several nutrients and trace elements necessary for

#### HOW WELL DO I EAT EVERY DAY?

- Do I always eat a minimum of 3 fruits?
- Do I always eat a minimum of 5 vegetables?
- Do I always eat several raw foods?
- Do I only eat organically grown foods?
- Do I always eat nuts, seeds, and legumes?
- Do I always drink 6-8 glasses of water or herbal tea?
- Do I ever eat white sugar?
- Do I ever eat white flour (bread, pastry, pasta)?
- Do I ever eat fried, fractionated or processed foods?

ASK THE NUTRITIONIST *continued on Page 2*

### ASK DR. JIM

## Virtual corn, virtual wool

**Q: How much corn is in a corn-derived vitamin or mineral? I am concerned that nutrients synthesized from a corn source might aggravate my sensitivity.**



*Jim Lemkin, N.D., C.N.S., is founder and co-owner of Pioneer Nutritional Formulas, Inc. He is a naturopathic and homeopathic physician in private practice since 1980.*

**A:** Corn is sometimes used in the synthesis of vitamins, and occasionally in other supplement preparations. In my opinion, most people with a sensitivity to corn probably have no reason to worry about taking a corn-derived supplement.

To begin with, in the majority of cases it is the protein part of a food that stimulates the immune system to produce a true allergic reaction, and the protein portion of corn is rarely used in vitamin manufacture.

When asking "Is there any corn in this supplement?" we have to define specifically what we mean by "corn". Do we mean the presence of the starting material, the whole grain, the protein, starch, or oil?

Most vitamin C, for example, comes from a microbial fermentation reaction using corn starch. Much of the vitamin C in products labeled "corn-free" was initially derived from corn starch (sometimes mixed with sago palm starch). I'm told that once you have isolated the starch portion of corn, it is extremely difficult to distinguish it from sago palm starch or any similar starch. And it doesn't seem to matter, because the starch itself is completely transformed by fermentation. The end product is pure, crystalline ascorbic

ASK DR. JIM *continued on Page 4*

#### *In This Issue*

- ASK THE NUTRITIONIST . . . 1
- ASK DR. JIM . . . . . 1
- TIDBITS FROM TERI . . . . . 4

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**A:** Many people ask me why they need to take nutritional supplements. I well understand their confusion and resistance, especially in these demanding times. It's hard to justify spending our hard-earned dollars on supplements when we already spend plenty on good food. Vitamin tablets and capsules don't grow on trees, so one could easily argue that taking supplements is not natural. But neither is the polluted world we live in today.

As recently as 100 years ago, you probably could get all of the necessary vitamins and minerals from food alone. But this is virtually impossible in this day and age, for two major reasons. The first of these is the diminished nutritional quality of the foods we eat. The second has to do with stress and its physiologically depleting demands. Continuous and extreme stress - both emotional and environmental - seems to go hand in hand with modern living, and our bodies need help to counter its detrimental effects.

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**Poor food, poor nutrition**

Because of modern agricultural methods and processing treatments, most food today is severely depleted in several nutrients and trace elements necessary for health. Research shows that large-scale commercial farming produces crops that are up to 86% less nutrient-rich than their organically grown counterparts.<sup>1</sup> When these already nutrient-depleted crops are heavily processed, the final product becomes even weaker in nutritional value. Consider the case of the whole wheat berry: routinely stripped of its nutritious bran and germ layers, bleached with chlorine, ground into flour, and then processed and conditioned into doughy pastries, breads, pastas and cereals. There is far more nutritional value found in a bowl of steamed organic whole wheat berries than in a donut, but how many of us include wheat berries in our daily fare?

**Food fortification is only a band aid.**

Processed food products are so nutritionally empty that they must be "enriched" with added vitamins. However, fortified, fractionated foods can never recreate the rich nutritional matrix of a whole food. Between the pesticides, herbicides, fertilizers, and processing plants (not to mention genetic modification), you can see why it might be hard to receive adequate nutrition from diet alone. Our most readily available foods do not deliver anywhere close to the same nutritional

value today as they did in the past.

**So, you still think your diet is good?**

Even for those who do eat extremely well, there are many other factors inherent in modern living that alter and increase nutritional needs beyond what food alone can provide.

Consider:

- the water you drink,
- the cleaning products you use, and
- the lotions you put on your skin.

Would you feel comfortable eating all of the ingredients in your face cream? In a way, you already are eating them, because in addition to emollients, skin absorbs preservatives, artificial colors, and all manner of toxins. (The efficacy with which the skin, our largest organ, can absorb substances explains why trans-dermal patches are currently being used to deliver medications from estrogen to nicotine.)

**Hold your breath.**

Maybe you only use non-toxic, natural body care and cleaning products. Yet beyond our control, we all are exposed to a wide variety of harmful pollutants. How pure is the air you breathe?

- Are you ever exposed to second hand smoke?
- Do you commute to work in traffic, or shop at the mall, where toxins are constantly outgassing from carpets and textiles?
- Perhaps you wear only "natural" cotton clothing, but remember, most cotton fiber is highly treated with chemicals. When inhaled, these chemicals can produce free radicals in your body, as do all of the pollutants we absorb through our lungs, mouth and skin.

**Rusting from the inside out**

Another word for rusting is oxidation. Although our bodies are not made of metal, they can be damaged by biological oxidants or "free radicals". Free radicals are un-bonded oxygen molecules produced as normal byproducts of metabolism, and generated when the body is exposed to toxins such as solar radiation, air pollutants, pesticides, food additives, alcohol, drugs, tobacco smoke, and so on.

**Too many toxins**

Our bodies were designed to handle the manageable quantities of metabolic and environmentally-precipitated free radicals generated in prehistoric and even pre-industrial times. Working in concert with the antioxidant nutrients so plentiful in our early plant-based diets, our internal detoxification systems (see Pioneer Pearls *Special Detoxification Issue*) could effectively process these renegade oxygen molecules. But exposure to high levels of environmental toxins with no corresponding increase in phyto-antioxidant intake causes free radicals to be generated in quantities that overwhelm our innate abil-

**FOOD COMES FIRST**

Supplements can never take the place of healthy food, nor are they intended to. As the name implies, supplements are intended to be used "in addition to", not "in place of" a wholesome diet. Food contains a plethora of micro-nutrients that scientists cannot yet fully understand, much less put into a safe, effective tablet form.

*Food always comes first, so let it be high quality food.*

ity to deal with them. Excessive levels of free radicals circulating in the blood stream cause oxidative stress that can wreak havoc on our internal biology. It is now believed that premature aging, cellular degeneration, and cancer can all be attributed to free radical proliferation.

## Free radical scavengers

Antioxidant nutrients such as beta carotene and vitamins C and E are capable of scavenging free radicals. These essential nutrients are all natural components of the fruits and vegetables that formed the basis of our original diet. But poor eating habits and the depleted nutritional value of our food make it challenging to obtain sufficient amounts of these nutrients from diet alone. This, along with the increased sources of environmental stressors surrounding us today, increases our need for supplemental antioxidants.

## The stress effect

As we all know, the environment is not the only source of stress in our lives. Many of us live in a state of constant emotional stress so commonplace that we barely notice it. But the body notices, and must respond. It does so by drawing on our stores of B-vitamins and other nutrients such as vitamin C and potassium.<sup>2</sup> Again, we cannot expect food alone - certainly not the foods of commerce - to effectively counter the nutritional burden caused by continuous stress.

## Move it or lose it.

Our sedentary lifestyle is another modern phenomenon with physical repercussions that can be offset through supplementation. Consider osteoporosis, a debilitating loss of bone mass which affects thousands of Americans. Weight bearing exercises such as walking were the traditional way to maintain sufficient bone mass. But for many today, the only walking we do is to and from the car.

## Feeding our bones

Science has shown that in addition to exercise, calcium and magnesium, along with vitamin D and boron, are all essential for bone health. However, sufficient amounts of calcium and magnesium are not easy to obtain through diet alone, a specific reason why I recommend nutritional support through supplementation.

## Supplements support health.

Now that I have convinced you (I hope!) of the need to take supplements, you may be wondering where to start. I recommend beginning with what most health professionals agree should form the foundation of any supplement program: a high quality, complete multiple vitamin and mineral supplement containing effective

amounts of all the known vitamins, minerals and trace minerals.

## One is not enough.

It may be necessary to take more than one tablet to receive all this nutrition. Often, a daily multiple vitamin/mineral will be low in calcium and magnesium, two nutrients which tend to take up a lot of tablet space. When this is the case, a separate calcium/magnesium formula to complement the multi is advised.

## Beyond adequacy

A potent vitamin/mineral supplement (with additional calcium and magnesium if necessary) will help you achieve nutritional adequacy. But if your goal is optimum, rather than adequate health, you may require even higher levels of certain nutrients. Be prepared to go beyond the minimum daily requirements outlined by the FDA. Traditionally, RDI levels tend to be on the low side, and in many cases, it takes years for the FDA to approve higher levels for a nutrient. (This was seen recently in the case of folic acid, previously denied a health claim but now FDA-recommended for the prevention of spina bifida and neural tube defects in fetuses.<sup>3</sup>)

## Your biochemical individuality

The concept of biochemical individuality proposes that each person's nutritional requirements are unique. Your unique needs are largely dependent upon genetics, but may shift with the stages and circumstances of life. Even closely related individuals (i.e. identical twins) can have profound biochemical differences.<sup>4</sup> No two people have the same exact nutritional needs, and many of us harbor hidden biochemical conditions that may increase our demand for certain nutrients. For example, someone with a family history of type 2 diabetes might require significantly higher amounts of vitamin B3 than most individuals, even if they have not developed diabetes themselves<sup>5</sup>.

### SOME SYMPTOMS OF NUTRITIONAL INADEQUACY

- lusterless, easily broken hair
- cracks or glossy spots on the tongue
- cracks/redness at the corners of mouth and nose
- red or infected gums
- rough skin at back of arms
- white spots or ridges on fingernails
- bloating, stomach pain, or excessive gas after eating
- chronic bad breath
- exaggerated carbohydrate cravings

## Symptoms of deficiency

Most vitamin deficiencies do not first express themselves as diagnosable diseases such as scurvy or rickets, but rather as psychological changes - insomnia, irritability, modified appetite - and gastrointestinal difficulties. Other symptoms that may not be apparent to the casual observer are almost always present as well. For example, white spots on the fingernails almost always indicate a zinc deficiency.<sup>6</sup> I can not count the times I have seen these spots clear up when zinc or a good digestive enzyme is added.

Many of the symptoms that point to a nutritional deficiency are conditions that people often live with for years without ever suspecting that they could be corrected with nutritional supplementation.

acid, devoid of the presence of even one molecule of corn. Whether or not this substance contains the energetic "essence" of corn can not be determined by conventional science.

So although corn may be used as the starting material for vitamin C synthesis, *the resulting U.S. Pharmacopoea (USP) grade vitamin C contains no corn-related allergenic material.* Therefore, it should not aggravate your corn sensitivity or allergy. This principle is true for numerous other USP grade vitamins and raw materials.

Incidentally, the "USP" designation signifies the exact preparation method for a vitamin, mineral or herb, and also serves as a standard of purity. Almost all supplements that contain more than just a few milligrams of any vitamin per serving have used USP grade [or lesser quality but similar] material somewhere in the formulation process. This includes "food source" or "food grown" supplements, most of which use USP grade nutrients plus yeast as their starting material. (See Pioneer Pearls *Special Double Issue* for more on "food grown" supplements.)

Sometimes a corn-derived starch is used in other areas of supplement manufacture. But remember, as the starch becomes highly purified, it also becomes less and less potentially allergenic. For some people the word "starch" is a bad word, but starches are merely another term for the carbohydrate portions of food. In reality, each of us eats a far greater variety of different starches every day than are present in supplements.

Related to your question is the current debate surrounding vitamin D<sub>3</sub>. Current methods for synthesizing vitamin D<sub>3</sub> rely on either one of two starting materials, fish oil or lanolin. Because lanolin comes from the wool of living sheep who are not harmed during the shearing process, lanolin-derived vitamin D<sub>3</sub> provides an excellent vegetarian source of this nutrient. The debate is about whether or not the finished product is vegan.

Most vegans are committed to non-harming of animals (ethical vegan) and/or not ingesting any product that comes from an animal (dietary vegan). Vegans have different levels of commitment to this principle. In our case, when the ethical requirement of the vegan is to not *ingest* any animal product, we need to determine if even the slightest trace of animal product remains in the finished vitamin D<sub>3</sub>.

According to science, the answer is no. There is no measurable, molecular trace of animal, e.g. lanolin, in lanolin-derived, USP grade vitamin D<sub>3</sub>. Again, like vitamin C, vitamin D<sub>3</sub> is highly processed using multiple steps of synthesis that make it extremely unlikely that the finished product will contain even the slightest trace of animal material. Beyond science, the possible existence of a remaining energetic trace of animalness, an essential force-field, if you will, is as difficult to disprove as it is to prove.

This is not to say that vegans should use a supplement that contains vitamin D<sub>3</sub> simply because there is no lanolin present in the actual tablet. For some, vitamin D<sub>2</sub>, which is synthesized from fungal and plant sources, may be another option. Each individual

## TIDBITS FROM TERI

**Vitamin E number one.** If you could only take one vitamin, what would it be? The Weill Medical College of Cornell University casts their vote for vitamin E. "The Science of Eating Right: Vitamins, Minerals, and Dietary Supplements" (available via [www.nycornell.org](http://www.nycornell.org)), cites vitamin E as the single most beneficial vitamin due to its ability to prevent and ease the symptoms of seven conditions: cancer, heart disease, diabetes, Alzheimer's, asthma, low immunity, and menopause. (Natural Products Industry Insider, 6/26/00)

**Gamma-oryzanol fights menopause symptoms and more with no side effects.** A number of Japanese researchers have shown the rice bran oil derivative gamma-oryzanol to be effective in the treatment of menopausal symptoms. In one study using the Kupperman Menopausal Index - a method based subjectively on symptoms such as hot flashes, chills, dizziness, insomnia, and fatigue - women taking 300 mg/day of gamma-oryzanol for four to eight weeks experienced an 85% improvement of symptoms overall. Gamma-oryzanol, a natural antioxidant, has also been shown to lower blood cholesterol levels. Best of all, its use produces no side effects. (Asia Oceania J. Obstet. Gynaecol 1984 Sep;10(3):317-23. and Arch Latinoam Nutr 1998 Mar; 48(1):7-12)

**Smoking hurts hearts, vitamin C can help.** A European study reported in the American Heart Association journal *Circulation* (2000;102:1233) proved for the first time that the harmful effects of smoking extend past the epicardial arteries, affecting the regulation of myocardial blood flow. The study showed coronary flow reserve reduced by 21% in smokers. Positron emission tomography showed that vitamin C normalized coronary flow in smokers while having no effect on non-smokers. According to the researchers, this proves that increased oxidative stress is at least in part responsible for the damaging effects of smoking, and that antioxidants such as vitamin C can help counteract this damage.

**Ipriflavone works in two ways without estrogenic effects.** Ipriflavone, a synthetic flavonoid resembling the plant isoflavone daidzein, is showing great promise in the treatment of osteoporosis. Not only does ipriflavone appear to suppress the activity of osteoclasts - cells that cause bone degeneration - but recent studies suggest that it may also stimulate osteoblasts, the cells that actually build bone. And unlike natural isoflavones which have a weak estrogenic effect, ipriflavone does not seem to have the estrogenic effects of stimulating tissue growth in breast and uterus, making it a safer choice for some women. (Nutrition Science News, Vol. 5, No. 8, and Osteoporosis Int 1997; 7:119-125)

should make their own consumer choices based on their own personal health requirements, ethics and value systems. My intention here is only to dispel the type of fears that you may share with some of my patients, fears that a supplement might cause harm because it still contains traces of the starting material it was initially synthesized from. More often than not, no such trace remains.