

## Nutritional Supplementation

The National Health Association (NHA) strongly recommends an SOS-free, whole-plant-food diet, not supplementation, as the best way to meet your nutrient needs. The NHA emphasizes that a standard, plant-poor diet focused on animal and processed foods promotes dangerous excesses and toxic byproducts of nutrition as well as deficiencies of plant-based nutrients. These excesses and deficiencies contribute to the most devastating diseases and health problems. Since dangerous excesses of nutrition are such a significant concern and cause of disease, it is imperative to realize that you can't resolve a problem of excess with supplementation. There is only one way to solve a problem of excess, and that is to reduce it. Maintaining an SOS-free, whole-plant diet provides the only solution to this problem.

### Nutritional Content of Whole Food

When scientists first examined the nutritional content of fruits and vegetables, they discovered nutrients that are now well-known (vitamins, minerals, antioxidants, and other phytonutrients). However, as these foods were more closely examined over time, an even greater variety of previously unknown nutrients and cofactors were also discovered. This suggests that, in addition to the many nutrients we are aware of, whole foods are very likely to contain an additional array of important, undiscovered factors that will be revealed over time. So, when you eat whole foods, you're eating both known and unknown elements. And it is important to understand that previously unknown nutrients have been found to be as important, if not even more important, than the ones that had been known prior

to their discovery. When supplements are made, they cannot contain the crucial unknown elements contained in whole foods because we don't know what they are yet. Therefore, supplements by their very nature are deficient.

When you eat the bounty that nature provides, you are eating known and unknown nutrients that combine and interact synergistically to support their optimal utilization, which is most essential for life and health. All chemical reactions and functional pathways in the body, whether the work of a digestive enzyme, the production of crucial hormones, or a result of other processes, are promoted and catalyzed by a panorama of nutrients and cofactors. Typically, these pathways are controlled and modified by feedback related to the quantity of the nutrients and factors involved in the steps of these

pathways as well as the end-products they produce. So, if you continue to supplement any nutrient, digestive enzyme, or hormone, the body will react as if enough of these products are already being produced and available, and it will reduce or completely shut down its own natural production of them.

### Supplementation vs. Substitution

As you will continue to see, it is important to understand that even the best *supplementation* can never *substitute* for a whole-plant-food diet. Unfortunately, many people have a dangerous confidence in supplements, leading them to spend too much of their food dollar on these fragmented foods and not enough on the whole foods that can truly improve the quality of their nutrition.

## The Symphony of Whole-Food Nutrition

Nutrition is a symphony, an orchestration of known and unknown nutrients directed by the intelligence and wisdom of a body that absorbs, integrates, and transforms these nutrients into the substance and expression of life and health. Eating isolated, fragmented nutrients, the way many people do, is like trying to appreciate the full splendor of a Mozart symphony by listening just to the string section. You would get the basic idea, but you would never fully appreciate the splendor of the composition. The NHA urges you to experience the amazing splendor of whole-plant-food nutrition.

An argument is often made that because of the compromise of our commercial soils and even the debilitating hybridization and genetic modification of a variety of plant foods, some form of supplementation is essential. To a certain extent, some of these concerns are warranted, but by eating a diversity of plant foods in an organic form and grown in a variety of different, organically nurtured soils, you can eliminate most of these concerns.

However, if a comprehensive evaluation of your eating and lifestyle plan coupled with an evaluation of your blood chemistry indicates some compromise or deficiency, many hygienic and plant-based nutritionists and doctors suggest considering some supplementation of the following nutrients in combination with a diverse vegan, whole-plant-food diet.

### Vitamin B12

Vitamin B12 is essential for the normal maturation of red blood cells and the integrity of the part of your spinal cord that processes sensory information. When vitamin B12 is deficient, blood cells are incapable of effectively carrying oxygen, and a form of anemia called pernicious anemia can develop. Vitamin B12 is found in greatest concentration in animal foods. However, it is a byproduct of bacterial metabolism, so it can be produced by bacteria living naturally in your mouth, in your intestine, and certainly on the surface of organic produce that has not been sprayed with pesticides. Vegans may have vitamin B12 levels that are lower than meat and dairy eaters, but these lower

levels may be normal for them. Understand that the normal lab values for vitamin B12 levels on typical blood tests were established in a more typical meat-eating population, so these values may be typical, but not necessarily normal.

To determine if one has a true deficiency of vitamin B12, two blood tests are recommended. The first measures vitamin B12 levels; the second measures the methylmalonic acid (MMA) levels. MMA is a chemical in the body that reacts with vitamin B12 to produce an enzyme essential in normal cell function and energy production. MMA is elevated in the urine or blood of more than 90 percent of people with true vitamin B12 deficiency. Therefore, measuring both vitamin B12 and MMA provides the most accurate assessment of B12 levels. If your vitamin B12 level is lower than normal on a typical blood test but your MMA level is normal or low, it is unlikely that you have a true vitamin B12 deficiency. However, if your vitamin B12 level is low and your MMA level is high, it is likely that you have a true vitamin B12 deficiency. Under these circumstances, 500–1000 micrograms of the methylcobalamin form of vitamin B12 should be taken sublingually once or twice per week.

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### Vitamin D

Vitamin D levels are linked with bone health, hormonal regulation, the balanced function of the immune system, and the health of a wide variety of body systems.<sup>1</sup>

When sunlight interacts with cholesterol in your skin, it produces vitamin D3, which is transported to the liver. There it is converted into 25-hydroxycholecalciferol (the form of vitamin D most commonly used to measure vitamin D levels in the blood) before it is processed into its final form in the kidney. It has been suggested that vitamin D deficiency may be associated with obesity; however, since vitamin D3 can be stored in fat cells, it is not clear whether a low D level causes obesity or if it is the result of obesity. Interestingly, when the blood level of vitamin D is higher prior to dieting, there is a significant increase in the loss of weight and belly fat in adult men and women who subsequently followed a calorie-restricted diet over a three-month period.<sup>2</sup>

Typically, just 10 minutes three to four times per week of soft sun exposure (early morning or late afternoon) on as much of the body surface that you can expose should be adequate to meet your vitamin D needs. However, there is no direct correlation between the extent of sun exposure and blood levels of vitamin D. There can be extensive tanning of the skin, yet abnormally low blood levels of vitamin D, so measuring your vitamin D levels is recommended to determine if you are a candidate for supplementation.

The test that is recommended is 25-hydroxycholecalciferol (25-OH vitamin D) with a normal range of 30–100 ng/ml. Many doctors typically supplement people with levels less than 30, and maintaining blood levels closer to mid-range (40–50) ensures even better health outcomes. The NHA recommends moderate sun exposure as the first approach, but if this is not working to maintain normal levels or if you live in a climate where sun exposure is limited, daily supplementation of 1000–2000 IU of vitamin D3 is recommended for a period of several months prior to a follow-up test.

### EPA and DHA

There are two essential fatty acids (EFAs) that cannot be made by the body and have to be provided by your diet. These EFAs are linoleic acid, part of the omega-6 family, and alpha linolenic acid (ALA), a member of the omega-3 family. They play a major role in balancing the inflammatory action of the body as well as promoting healthy function of the brain and nervous

system. Health and the reduction of chronic disease require a plant-focused anti-inflammatory eating plan that provides a ratio of omega-6 to omega-3 fatty acids of 1:1 to 4:1, whereas most Americans are consuming a dangerous inflammatory diet with a ratio of 15:1 to 30:1.<sup>3</sup>

A diversity of greens, grains, beans, nuts, and seeds provide both families of EFAs. However, the standard American diet contains an excess of omega-6-rich polyunsaturated corn, cottonseed, and sunflower oils in processed junk food, and preformed arachidonic acid in meat and dairy products. This drives the omega-6 pathway to overproduce prostaglandins, thromboxanes, and leukotrienes that can increase harmful, chronic inflammation that damages the entire body and brain. The ALA found in greens, legumes, whole grains, walnuts, and flax, hemp, and chia seeds promotes the omega-3 pathway that reduces inflammation, improving the omega-6 to omega-3 ratio and balancing the body's protective inflammatory response.

Various health organizations recommend an ALA intake of 1.1 and 1.6 grams a day respectively for adult women and men, which is easily provided and even exceeded by a diverse plant diet including a tablespoon of flax, hemp, or chia seeds in addition to a small handful of walnuts. Even a variety of deep greens and cruciferous vegetables provide a good source of ALA; for instance, half a cup of cooked Brussels sprouts contains about 135 mg of ALA, about 12% of your daily requirement.

The body converts ALA to longer-chain fatty acids of the omega-3 family (EPA and DHA) that are necessary for the healthy function of the brain and nervous system. The pathway from ALA to EPA to DHA is unidirectional and involves enzymes that promote this pathway.

Since preformed DHA primarily exists in algae and fish, the amount of EPA and DHA in a plant-exclusive diet comes primarily from the conversion of ALA. However, since less than 1% of dietary ALA is converted to EPA and DHA, many nutritionists typically recommend an additional minimal supplemental intake (250–500 mg per day of combined EPA and DHA in fish or algal oil form), but this may be questionable and unwarranted. Several studies have shown that vegans

and vegetarians have lower levels of EPA and DHA than omnivores consuming fish, but blood levels in vegans were stable and maintained by the conversion of ALA.<sup>4</sup>

In some cases, DHA may be deficient in people who either lack the enzyme that converts EPA to DHA or who have an enzyme that has become functionally unable to catalyze this conversion. So, in people who have a compromised enzyme system and who are not eating fish, some algae-derived DHA supplementation may be warranted. DHA can be measured in blood tests, and this should be done before you consider any supplementation. However, because of the normal feedback inhibition that works for all pathways in the body, you should consider that high doses of DHA supplementation may cause or result in feedback that blocks or inhibits the body's natural conversion of EPA to DHA. And because the omega-3 pathway is unidirectional, loading up on DHA supplementation does not provide the alpha-linolenic acid that is essential to the body. Therefore, increasing the intake of the higher omega-3-containing foods mentioned above or even supplementing with plant sources like ahiflower that contain larger concentrations of ALA and other precursors are better strategies than supplementation for producing the proper balance of EPA/DHA necessary for optimal health.

## SOS-Free, Whole-Plant Diet

The NHA unequivocally supports an SOS-free, whole-plant diet rather than supplementation as the most effective way to secure the wide range of macro- and micronutrients essential for health and disease prevention and reversal. Supplementation cannot substitute for whole-food nutrition. While there may be some situations where particular nutrient deficiencies are improved by specific supplements, nothing supports and manifests the dynamic symphony of nutrition like whole plant foods.

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