

Phytonutrient Supplements: Facts, Fictions, and Foolishness

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In a recent edition of a popular men's health magazine, a PhD nutritionist was asked, "Do people need supplements?" The familiar reply was, "Not if they eat a balanced diet and are in good health." Most of us could add several other qualifiers, but instead, let's take the doctor's response as is.

The Facts

The USDA, in its *Dietary Guidelines for Americans 2005*, now recommends a wide variety of seven servings of fruits and vegetables daily for "average" women and nine per day for "average" men. Recommendations go as high as 13 daily servings, as calorie requirements increase for those larger and more active than average.¹ The National Cancer Society admits that the "5-a-day" gospel was just the bare minimum.² Nonetheless, it is routinely reported that only one in five adults follow this advice, and even less children do. (Some reports say two in five adults attain the minimum, but that was before the potato was moved from a vegetable to a grain, so French fries are no longer counted!)³

The evidence gathered from 1994-2004 as part of the Continuing Survey of Food Intakes by Individuals concludes, "A significant gap in the variety of fruit and vegetable intake was also found, which does not allow for an optimal or even near-optimal intake of antioxidant (and other) nutrients needed to protect against ... 'killer' diseases."³ (emphasis mine) Yet four of the five leading causes of death are related in part to inadequate fruit and vegetable intake:³

Death in the U.S. - 2001	
Heart Disease	699,697
Cancer	553,251
Stroke	163,601
Obstructive Pulmonary Disease	123,974
Accidents	97,707
Diabetes	71,252

As for the 2005 USDA guidelines, it has recently been reported that only three percent of males report consuming the now-recommended nine servings of fruits and vegetables a day. In fact, men on average eat only four servings a day. Yet only 25 percent of men believe they need to eat more!⁴ The Produce for Better Health *State of the Plate Report* found, "No other food commodity (fruits and vegetables) - especially one with such importance to disease prevention - has a gap this large between recommended and actual intake."⁵

According to recent excerpts from U.S. government press releases, only 3 percent of the U.S. population follows just four out of five of the recommendations of the new food pyramid guidelines!

No wonder that even the AMA recommended recently that everyone take a multivitamin!⁶

So, what is it in fruits and vegetables that so promotes lifelong wellness? "The vitamins, minerals, fiber and, especially, the *phytochemicals* in fruits and vegetables appear to reduce the risk for ... diseases."² (emphasis mine) Surely the natural vitamins, minerals, and fiber of fruits and vegetables are of great value. Nonetheless, conflicting evidence has been found for the association between the use of vitamin and mineral supplements and the prevention of cancer and heart disease.² But the evidence for phytonutrients/phytochemicals keeps growing:

- "Diets rich in phytochemicals provide protection from vascular diseases and many cancers (thru) direct antioxidant activity as well as modulation of enzyme expression or hormone activity... the total dietary load of phytochemicals may have important implications for health."⁷
- "When phytochemicals are added to the diet, the capacity of human genes to protect and restore optimal health is far greater than previously recognized."⁸
- "Knowledge of the role of physiologically active food components, from both phytochemicals and zoochemicals, has ... evolved as ... science has advanced beyond the treatment of deficiency syndromes to reduction of disease risk."⁹
- "The Dietary Approaches to Stop Hypertension (DASH) diet substantially lowers blood pressure and reduces blood lipid levels ... the health benefits ... are partially attributable to the phytochemicals."¹⁰
- "*In vitro* and *in vivo* studies have demonstrated convincingly that dietary supplementation of phytochemicals has beneficial effects against certain types of pathogenesis, disease, cancer, and aging."¹¹

Therefore, if I were to be asked, "Do people need to take phytonutrient supplements," my answer might be, "No, not if they follow the USDA guidelines, live a healthy lifestyle in a clean and supportive environment, and are in otherwise good health." How many patients like this do you have? Of course, if you can get your patients to eat their fruits and vegetables, my hat is off to you! But for most clinicians, a phytonutrient supplement of some kind may be the only viable alternative-though admittedly second best.

Some basic things to look for in a phytonutrient supplement include the following:

1. Look for wide variety from fruits and vegetables of all the colors: "Fruits and vegetable phytochemical extracts ... from the combination of phytochemicals ... the additive and synergistic ... "complex mixture" of phytochemicals ... are responsible for the benefits ... no single antioxidant can replace the combination of natural phytochemicals."¹²
2. The preferred source should not just be a pill with a grab bag of isolated phytonutrients, but should include whole food and juice powders: "Phytochemicals often appear in nature as families of related compounds [that] ... may behave synergistically ... and ... activate metabolic enzymes ... as a network."¹³
3. They should have some measure of potency, the best of which presently is antioxidant capacity: "People may be able to reduce risk of diseases of aging - including senility - simply by adding high-ORAC foods to their diets."¹⁴

The Fictions

It must be emphasized that phytonutrient supplements are just that: phytonutrient formulas. They do not provide anywhere near the amounts of fiber, vitamins, minerals, sugars or water of the whole fruit. And no matter how careful the processing, there is always something lost.

So, when you read a label, advertisement or claim that "one scoop is equal to six servings of fruits

and vegetables," you know that the company proclaiming such is probably either ignorant or dishonest. Indeed, companies making similar proclamations as the one above have listed on the label that the product has 4 percent of the RDI of Vitamin C. Now, what six fruits and vegetables provide only 4 percent of the RDI of vitamin C? What I presume they mean to report is that their phytonutrient has the phytonutrient-based antioxidant power of six servings of fruits and vegetables, or about 3,000 oxygen radical absorbance capacity (ORAC).

The Foolishness

"You can fool some of the people some of the time, but you can't fool all the people all the time."

When I first wrote about ORAC testing in the April 21, 2003 issue of *Dynamic Chiropractic* [www.chiroweb.com/archives/21/09/17.html], antioxidant capacity testing for phytonutrients was uncommon. Now, we see it more and more, which is a good thing. However, I think some further familiarity with ORAC's strengths, weaknesses, and abuses is in order.

First, ORAC is not a be-all and end-all. Raisins have a higher ORAC than broccoli, but that does not mean raisins are "better" for you than broccoli. Raisins are rich in polyphenols, which are great for the heart, whereas broccoli is rich in organosulphurs, good for detoxifying bad estrogens. One can "spike" the ORAC of a product by adding lots of red berries and green tea, while providing trivial amounts of terpenes, such as the various carotenoids in tomatoes, and organosulphurs, such as in broccoli, Brussels sprouts, and cauliflower. One wants a balanced spectrum of phytonutrients of all the colors. Imbalanced phytonutrient supplements will tend to have a high water-soluble (hydrophilic) ORAC rating, but a low lipid-soluble (lipophilic) ORAC rating.

Second, ORAC values will vary from batch to batch, even from test to test of the same batch. Companies that print one constant ORAC value on their labels from batch to batch do not seem to be aware of this fact. It would be more accurate to guarantee a minimum ORAC at time of production. The company should be able to produce an independent ORAC or other antioxidant capacity test from a very recent batch and from an unopened, sealed container.

Third, although there is no agreed upon exact scientific standard, one can easily argue from the literature that an "average" serving of fruit or vegetables may have an ORAC as low as 400 or as high as 800 per serving. Companies that claim 6,000+ ORAC per serving and, on the same label, proclaim the phytonutrition of 15+ servings of fruits and vegetables, are again, likely either ignorant of the literature, or have succumbed to the temptations of hyperbole.

Or perhaps they are just poor at math. One company selling to health professionals first lists 5,000 mg of phytonutrient powders per 5 gm scoop, and then claims to also provide 600 mg of calcium! As stated earlier, phytonutrient powders, while having some vitamins and mineral content, are generally not rich in same. So, if 600 mg of added calcium comes from its richest source, calcium carbonate, then there would need to be 1,500 mg of it added, leaving only 3,500 mg for phytonutrients in the 5 gm scoop. But no calcium source is even listed on the label, nor is any room left for it in the 5 gm scoop supposedly already full of 5,000 mg of phytonutrient powders!

Having said all this, if a company at this stage is not supplying recent antioxidant capacity tests such as ORAC or TEAC (Trolox equivalent antioxidant capacity) on request, the most likely reason is that the results are not something they want to publish or advertise.

Doctor Beware

Your patients expect you to do your due diligence when it comes to recommending supplements. When you are dealing with large, well-established companies, you are likely in good hands. But

some of the best products come from smaller companies focused on just a few products. What should you look for then?

Visit the Web site. Who is the founder? What are his or her credentials? Who comprises the executive team, the board of scientific advisors? What papers has the team published?

For what professional journals do they write? At what conferences do they present? If the company is called "Nurses for Your Wellness," who are all the nurses and what are their credentials and standing? Does the company use cGMP (NNFA - A rated), ISO 9001 (2000), organic and FDA-approved facilities?

How large is the company? Today, with a Web site, a picture of a building and office, a phone, e-mail, a P.O. box, and a mail-order degree, most anyone can be in business, copying information and strategies from more legitimate concerns, fooling honest practitioners. *Caveat emptor*, doctor!

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