

## Lies, Damn Lies, and Phytonutrition

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The importance and awareness of certain beneficial phytochemicals in the plant-based foods we consume, known as phytonutrients, have grown rapidly in the past five years. There has been a natural corresponding increase in the availability, promotion and use of phytonutrient fortification in foods and supplements. Perhaps the most dominant example of this has been the proliferation of "green drinks," "red drinks" and "super-berry juices," both as canisters of powdered mixes and bottles of liquid concentrates. As I have much experience and expertise involving such formulations, I would like to share some troubling observations I believe will prove of value to my fellow practitioners.

Anyone familiar with reports from publications such as *Consumer Reports* or programs like "60 Minutes" knows that blatant mislabeling of nutritional supplements is far from uncommon. Indeed, the promoters of "Supreme Greens" have just been fined by the FDA for making outrageous, unsubstantiated claims about their product, promoted by a doctor of undisclosed credential via infomercial.

### ORAC Analysis

As perhaps a few of you might recall, I was the first writer to bring the concept of oxygen radical absorbance capacity (ORAC) testing of phytonutrient formulas to the general chiropractic audience. The notion was that although phytonutrients have many salubrious and diverse physiological functions, a relatively easy, scientific way of measuring the potency of any phytonutrient was to measure its strength as an antioxidant.

My recommendations for use of ORAC testing were based on the statements at the time from scientists at the USDA that a high-ORAC diet from fruits and vegetables of all the colors had been shown to significantly reduce the risk for all common diseases of aging.

I was gratified to see ORAC testing of phytonutrient mixes (and promotion of the results) become more utilized and appreciated. However, my experiences now lead me to write further clarifications and provisos to help practitioners make the best choices for their patients, who rightly depend on them for guidance and top-quality recommendations.

First, if ORAC results are used, I suggest they should be furnished for each batch, providing the actual lab report online, with batch numbers published and said report referencing an "unopened container." Otherwise, it's very easy for a company to send a "spiked" sample for a one-time test, and then report the artificially high score for years. Ideally, these numbers should be provided on a per-serving basis, not on a whole bottle or liter, which gives much higher numbers, and confuses doctors and patients alike.

In any case, I argue such scores should never be printed on a label, as it strongly suggests ignorance of the fact that scores will not only vary from batch to batch, but that the test itself runs a 15 percent standard deviation. At best, a company may write, "Each batch tested to provide a minimum of 3,000 ORAC per serving" or some such similar statement.

Many companies also fill their formulas with high amounts of very high ORAC phenols (green tea, berries, mangosteen), which is not a bad thing in and of itself. However, keep in mind one can garner a very high ORAC score (7,500!) from 500 mg of green coffee bean extract! (Reuters just reported that coffee is the main source of antioxidants in the American diet.)

But many of the healthiest phytonutrients, such as the organosulfurs from the cruciferous vegetables, are not high in antioxidant power, although they are very high in detoxification and other benefits. Therefore, one should not conclude that some phytonutrient formula rich in mangosteen, goji berries, red berries, etc., is a better product than a more complete "greens" formula, with fruits and vegetables for all the classifications of phytonutrients, simply because its ORAC is higher.

### Claims Made

One new greens product, strikingly similar to a product I co-developed five years ago, is all over the top of the search engines. It's claimed to be developed by a doctor, again of unknown credential. Besides this new greens product's clear and multiple errors on its label, it boosts the claim of having three times the ORAC of its competitors.

Knowing this to be impossible, I wrote the company supplying this new greens product, and presumably the doctor of unknown credential behind it, to furnish proof of its ORAC claims. The response I received is as follows: "Thanks for your inquiry. At this time I am unable to dedicate the resources required to answer your questions."

Worse yet, some products claim to provide the nutrition of five or even 10 servings of fruits and vegetables. To do this, the product would have to supply all of the macronutrients, all of the water, all of the fiber, all of the vitamins and all of the minerals, plus all of the phytonutrients of 5-10 servings.

The only produce that accomplishes this are the whole fruits and vegetables themselves! Companies that make such claims only show they have no scientific understanding; they are just "miss-copying" the legitimate promotions of other companies, the science of which they apparently do not really grasp.

### Staying Alert

I also would like to alert you to one new "red product" that makes the claim of providing the phytonutrient-based antioxidant power of 10 servings of fruits and vegetables. Besides clearly not providing fruits and vegetables of all the colors, the product has been shown via independent ORAC testing to have an ORAC of 1,600 units.

By even outdated USDA data, this is the phytonutrition-based antioxidant power of only two to three servings of fruits and vegetables. To make matters worse, the company places on the product's front label that it's made with certified organic ingredients, which is illegal unless the product is both 70 percent organic and made at a certified organic manufacturer, which it's not.

Indeed, new USDA data suggest a serving of seven vegetables and three fruits might have an ORAC score more like 14,000 units! Therefore, companies that have real, up-to-date science and real scientists on board will proceed to reflect that in their dosage recommendations and claims.

I rarely see such scientific responsibility in the phytonutrient drink-mix category, simply because, as best as I can tell, few companies know the real science, or have the scientists who would know on board! It must be understood that most any company can hire a doctor spokesperson of some

kind. But as a health care provider, you should be able to go to any supplement provider's Web site and see the scientific board of advisors, which should include a broad spectrum of credentials from recognized universities. This especially is true of small, relatively new companies that do not have a history of decades of providing reliable products to health professionals.

In closing, I believe that if health care providers are to recommend supplements, they should recommend the best, having done their due diligence to provide the same, as their patients rightly expect.

*Caveat Vendor, Doctor!*

Therefore, as providers of supplements, we ought to practice *caveat vendor*: seller beware.

In regards to phytonutrition, I recommend four easy ways to practice due diligence in this regard without being an expert:

1. Review the credentials of those on the scientific advisory board.
2. Make sure the manufacturer is cGMP, ISO 9001, FDA approved.
3. Insist that originals of the quality control tests be posted online on every batch number from sealed, unopened containers. (For phytonutrients, this should include antioxidant testing, heavy metals and microbial counts, and regular nutritional analysis of any macro- and micronutrients listed on the label, such as sugars, vitamins and minerals.)
4. Review the depth, quality and freshness of the science, product studies and information the manufacturer supplies on its Web site.

I only provide my patients with the highest-quality formulas. If I don't, and I do not get the results we both wanted, how can I know if it was my recommendation that was wrong, or rather that the supplement was sub-par? I tell all my patients the following: "I provide you with only the best products. Yes, they cost more. But the most expensive supplement is the one that does not provide what it claims and winds up costing you your health!"

*Resources/Notes*

1. Wu X, Beecher GR, Holden JM, et al. *Lipophilic and Hydrophilic Antioxidant Capacities of Common Foods in the United States*. Arkansas Children's Nutrition Center and Agricultural Research Service, U.S. Department of Agriculture.
2. We should keep in mind that as many phytonutrients are poorly bioavailable, so new, truly relevant ORAC and similar antioxidant testing should be *in vivo* testing, proving absorption.

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