



Sylvia R. Karasu M.D.
The Gravity of Weight

"What Potions Have I Drunk?" Concerns about Diet Supplements

Are some so-called remedies for weight control worse than the disease?



Posted Apr 26, 2014



Famous physician Sir William Osler (1849-1919)

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The distinguished physician and medical philosopher William Osler once said, "Man has an inborn craving for medicine...the desire to take medicine is one feature which distinguishes man, the animal, from his fellow creatures." Osler also said, "One of the first duties of the physician is to educate the masses not to take medicines." This particular aphorism has relevance to our perpetual quest for supplements that promise health benefits including appetite suppression and rapid weight loss.

In 2012 alone, Americans apparently spent \$32.5 billion on dietary supplements despite concerns and confusion about their effectiveness and safety, according to Garcia-Cazarin et al in an article (2014) in the *Journal of Nutrition*. Supplements, which may include vitamins, botanicals and herbs, and sports nutrition products, are not classified as either medication or food and hence not regulated by the Food and Drug Administration (FDA.) They are "not intended to prevent, diagnose, treat, mitigate, or cure diseases," even though many

people may think of them as having medicinal powers. As a result, the products themselves and the product labeling for these substances are not well-controlled: different manufacturing companies may produce vastly different substances (e.g. containing impurities and dosage irregularities) under the same name, and labels themselves may be misleading, inaccurate, overtly false, and even fail to mention safety concerns. Owens et al, in a 2014 article in *The American Journal of Medicine*, notes that the widespread use of the Internet makes the inadequate labeling all the more concerning. These researchers found there were 1300 English language sites that contained information on herbal products. Roughly half of these were retail sites, and fewer than 1 of 10 of these sites include information on their products' potential adverse effects or ability to interact with other medications. They also found that almost 14% of these retail Web sites included information that clearly violated FDA regulations by making overt medical claims. Further, web site testimonials by clients may be misinterpreted and confusing. Not all sites, of course, are misleading: non-retail sites are more likely to contain appropriate and authoritative information on safety concerns and more likely to suggest consulting a physician before using a dietary supplement.

Green tea extract has been touted for weight control. Source: istock.com, matka_Wariatka, used with permission

It is not clear whether green tea extract really helps weight control.

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In a 2014 article in *The New England Journal of Medicine*, Harvard physician Pieter A. Cohen noted "our woefully inadequate system for monitoring supplement safety" because "unlike prescription medications, supplements do not require pre-marketing approval" before they are offered for sale. Furthermore, though the FDA is

supposed to identify and remove supplements that are dangerous, it may never receive the information. Clinicians can certainly voluntarily report adverse events, but many supplements are sold directly to consumers through the Internet. Cohen reports that between 2008 and 2010 there were over 1000 reports made to poison centers (but not to the FDA) on problems with adverse reactions from supplements. Many of these supplements are particularly toxic to the liver. Abdulmjid and Sergi, reporting in a 2013 article in the *Journal of Pharmacology and Pharmaceutical Sciences*, reviewed over 250 studies involving dietary supplements and found substantial evidence for mild to severe liver damage and even deaths attributed to some of these compounds in susceptible patients. These authors, as well as Cohen, recommend a nationwide data base that could be maintained by a multidisciplinary team involving the FDA and poison centers, as well as "rigorous safety testing" for all supplements before they are marketed and sold.

Safety is certainly a major issue but what about efficacy? Astell et al, in a 2013 article in *Complementary Therapies in Medicine*, systematically reviewed double blind randomized controlled clinical studies of botanical compounds purported to aid in weight control. Of the over 5200 studies found, only 326 were randomized controlled studies and of these, another 216 had to be eliminated due to methodological weakness (e.g. small sample size, studies of short duration). Ultimately, only 14 studies of plant extracts met their inclusion criteria! Among the compounds they reviewed were green tea extract and Garcinia

cambogia (both of which were touted recently for weight control on the Dr. Oz program.) According to their systematic review, they did not find convincing evidence that plant extracts used as appetite suppressants for weight loss in the treatment of obesity are either particularly effective or necessarily safe. Their conclusion was that though some plant extracts “show promising results in the short term, there is need for longer duration clinical trials to verify” their claims of suppressing appetite. They recommend further studies to ascertain optimal dose, mechanism of action, adverse reactions, and long term safety considerations. This incidentally, was the conclusion back in 2001 in an article by David B. Allison, Ph.D. and colleagues in the journal *Critical Reviews in Food Science and Nutrition*. They added, “The lack of rigorous research is regrettable because it leaves health professionals without a sound basis for making recommendations to patients...” They also called attention to “economic reasons for this state of affairs,” namely that most of these products cannot be patented and hence there is “no assurance of a return on investment in research and development.” More recently, though, the National Institute of Health (NIH) is committed to funding research for dietary supplements. (Garcia-Cazarin et al, 2014)

Bottom Line: Buyer beware. Dietary supplements are not necessarily effective and for some, may be overtly dangerous. Search reputable, non-retail web sites for information and safety concerns before you purchase any products and consult your physician before starting any supplement as some may interact with medications you may be taking. Be sure to report any adverse reactions to your physician.

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The Shakespearean scholars among you will know my title comes from *Sonnet 119*.

About the Author



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In Print: *The Gravity of Weight: A Clinical Guide to Weight Loss and Maintenance*

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