

Table 2. Quick Look at Some Supplement Ingredients

HERB/NUTRITIONAL SUPPLEMENT	DOSE/CLAIM/CLARIFICATION
Chromium Picolinate Found in weight loss preparations and breads Watch amount being taken per day	200 mcg MAX per day ⁶⁶ Picolinate salt helps the chromium to be absorbed by the body. Claims to burn fat and help with weight loss, without much substantiation.
Calcium Can be found in a healthy diet that includes low-fat dairy products and other nutritious foods.	Bone protection can be seen with 1000-1500 mg elemental calcium depending on age and gender (Check dosage needs with RPh or physician). Adjust dosage dependent on elemental calcium amount. Side effects can include constipation and kidney stones. Drink plenty of water.
Vitamin C: Ascorbic Acid * Smokers need 200 mg per day. 100 mg can be consumed in 8 oz of orange juice * May interfere with chemotherapy agents * Many orange juices now have additives that can hinder absorption of medications, such as calcium, vitamin E, and folic acid	60-400 mg per day. Higher doses can cause stomach upset and kidney stones. When using chewable tablets, rinse out mouth.
Ephedra (the Chinese herb: Ma Huang) Can be highly dangerous Main ingredient continues to be found in many weight-loss products, as an adulterant. Historically promoted for aiding weight control, boosting sports performance and energy. No clear-cut benefit—raises blood pressure and otherwise stresses the circulatory system.	No safe dose—FDA banned its use in dietary supplements (as of 2/2004) due to high side effect profile. It continues to be found in weight-loss supplement formulations and energy products without being listed on the label. Care should be taken in purchasing these products on the Internet. The FDA also banned it as a drug several decades ago because of erratic absorption and high side effect risk. Effects can be severe: rapid heart rate, convulsions, seizure, coma, and death.
Folic acid (folate) a B vitamin Found in many vegetables, beans, fruits, whole grains, and fortified breakfast cereals—best source through foods.	400 mcg/day MAX for preventive use. Although low intake of absorbable folates is associated with high serum levels of homocysteine and high incidence of CV disease and stroke, to date, there is no proof that supplementation with folic acid reduces or prevents coronary disease. And high doses can mask vitamin B-12 deficiency, permitting progression of neurological disorders. ⁶⁷
Melatonin Currently no proof as to any anti-aging benefits, and while 0.1-0.5 mg can improve sleep in some cases, when taken at the wrong time, melatonin can the disrupt sleep/wake cycle, causing confusion, drowsiness, and headache. May also be dangerous to those with co-morbidities.	0.3-0.5 mg /day MAX. Higher doses are easily obtainable. In fact, be careful—some nutrition stores only sell products in much higher doses. 1-300 mg. Those doses can change the body's clock. As the body ages, melatonin levels reduce. There is little evidence to suggest any benefit of chronic dosing of this product. In fact, evidence suggests that harm can be done to hormone levels and other chemicals in our bodies. Large doses can inhibit ovulation by reducing estrogen release. This could impact on heart disease and bone loss.
St. John's wort (hypericum plant) (Active ingredient is probably hyperforin, since evidence shows that hypericin does not cross blood brain barrier) Promoted for nervousness, depression, unrest, anxiety Some potential drug interactions: oral contraceptives, cyclosporin, AIDS meds, other anti-depressants, any ephedra-containing products.	600-900 mg/day. It does have some anti-depressant effects, but the herb has not been standardized for purity or active ingredient and may interact with many foods and drugs. It has similar effects to the MAO inhibitor anti-depressants. It may interact with avacados, yogurts, red wine, cheeses, etc. Can cause dramatic photosensitivity. St John's wort with SSRIs can cause central serotonin syndrome. Watch for drug interactions. (Continued)

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<p>Zinc No medical consensus yet available on treatment of common cold, although effects appear to be dependent on zinc being absorbed through either nasal mucosa or mucus membranes of mouth.</p>	<p>12-15 mg/day is RDA (recommended daily allowance). Plays a role in wound healing and immunity. Not all zincs are the same. Chronic doses of 50 mg and above can be harmful. 100 mg is toxic. Zinc gluconate lozenges have been shown to help reduce the impact of cold symptoms when taken at no more than 66 mg/day (6 lozenges zinc gluconate). Take exactly as directed on the package. Don't ingest citrus within 30 minutes of sucking a lozenge. Take with meals or snacks to help prevent stomach upset.</p>
<p>Echinacea Should be avoided in all patients with active infections or wounds, recent or impending surgery, TB, MS, SLE, HIV, or transplant recipients. While a recent Cochrane review shows some efficacy, evidence is insufficient to support echinacea for treating URIs.</p>	<p>6-9 ml (of extract) or 600-900 mg three times a day only during a cold or mild viral infection. Long-term chronic use can lead to reduced ability to fight infection. Helps boost the production of white blood cells. Little substantiation in its benefits to reduce cold symptoms.</p>
<p>Goldenseal May be harmful. No safe dose.</p>	<p>Does not improve our immune system.</p>
<p>Beta-carotene Best source: fruits, vegetables, and grains.</p>	<p>Supplementation has been associated with lung cancer, especially in smokers. High dose supplementation not recommended for anyone.⁶⁷</p>
<p>Ginkgo biloba It may interact with aspirin, warfarin, or NSAIDs—and may potentiate antithrombotic drugs. Ginkgo <u>might</u> slightly improve mental functioning in patients who have poor circulation of the brain—has not been proven beneficial in normal patients.</p>	<p>Average dose 40 mg three times a day. Inhibits platelet activating factor (PAF) platelet aggregation. May cause bleeding. It inhibits steroid production and may affect many chemicals in the body.</p>
<p>DHEA (dehydroepiandrosterone; this substance is a precursor of androgens and estrogen) Can be very unsafe</p>	<p>This substance, considered an anabolic steroid, was banned as a drug by the FDA in 1994. Health food stores often sell a “DHEA” supplement that is actually wild yam extract⁶⁹ containing plant steroids that the body cannot convert to DHEA. Currently no scientific evidence exists for prescribing DHEA for any reason whatsoever.⁷¹ May enhance the feeling of well-being, but none of the other alleged benefits have been proven. May cause endometrial or prostate cancer. Increases acne and facial hair.</p>
<p>Ginseng (active effect is interferon-like^{*72}) Standardization has been poor—there are several varieties with very different effects and strengths. Decreases in post-prandial blood sugar have been reported. Heavy menstrual bleeding has occurred, hypertension can occur. Long-term use not recommended.</p>	<p>100-300 mg/day of extract. Long-term, well controlled studies are needed to document any benefit or risk associated with chronic use. May be adulterated or mislabeled. Several types of ginseng are available and may have different effects—identify country of origin. Interactions can occur with warfarin, aspirin, insulin, and phenelzine (an MAO inhibitor). The question comes up about the safety of its use with St. John's wort. To have maximum effect, the root must be more than three years old. <i>(Continued)</i></p>

alternative medicine healing practices in the context of rigorous science and to train CAM researchers and disseminate authoritative information to the public.²¹ Even in 2009, controversy still sur-

rounds both the strategy for and the \$122 million budget²¹ associated with its work. The National Cancer Institute also has an Office of Cancer Complimentary and Alternative Medicine

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<p>Garlic (active chemical-allyl) Eat as much as possible Mild benefit on cholesterol. Unfortunately, little evidence to support this benefit since quantity needed to achieve these effects is quite large—and medicinal benefit has not yet been substantiated.</p>	<p>Eating large quantities of the garlic bulb shows immune benefits. Supplementation has not been shown to have the same benefits.** Take care since interactions can occur with anti-coagulant therapy, especially high-dose warfarin.</p>
<p>Vitamin E (Alpha Tocopherol) For hot flashes, studies show only slight reduction in hot flash incidence versus placebo. Not currently recommended.</p>	<p>Take no more than 200 IU/day. Increased cardiovascular death risk when daily dose is greater than 400 IU in long-term studies. Acts as an anticoagulant in high doses.</p>
<p>Selenium</p>	<p>Can be beneficial to heart and prostate if supplemented to a MAX of no more than 200 mcg/day for prevention.</p>
<p>Glucosamine/chondroitin Glucosamine 500 mg / chondroitin 400 mg Dose: 1 tablet every 8 hours Take around the clock or as controlled-release, once-a-day product Tablet used in first NIH study was a controlled-release, once-a-day product that had to be standardized and made specifically for the study. It is not currently available on the market. Side effects can also include: GI symptoms—nausea, diarrhea, heartburn, indigestion. Some preps include MSM (methylsulfonylmethane) and Loxin Little evidence to substantiate the added risks</p>	<p>May provide some mild pain relief in arthritis patients, but not for first-line therapy. Benefits may some day be seen in tissue repair—yet to be fully proven. Few well controlled studies have been completed, and the studies that have been done to treat OA show less benefit than some NSAIDs in providing pain relief. Side effects can include increased blood sugar levels (and insulin resistance) Evaluation: GAIT study done at the NIH—this large long-term study compares glucosamine, glucosamine/chondroitin, Celebrex, and placebo in the treatment of OA patients. No justification as a preventive.</p>
<p>Saw palmetto May have alpha 1 adrenergic blocking effect—does not decrease PSA levels Long-term effectiveness remains to be established No evidence to support use in prostate cancer</p>	<p>0.5-1 gm of the berry made into tablets. It may have similar mechanism of action to finasteride (Proscar)—additive effects can occur when used together. Pregnant, lactating women and children should not ingest.</p>
<p>References</p>	
<p>6, 36, 55-72 *Ginseng modulates the immune response by induction of interleukin 12 production. In the activation of macrophages, there is increased production of interferon-gamma</p>	
<p>**The chemistry of garlic has been extensively investigated. Its bulbs contain an odorless, sulfur-containing amino acid derivative known as alliin (S-allylcysteine sulfoxide). This parent substance has no antibacterial properties, but when the bulbs are ground, alliin comes into contact with the enzyme alliinase, which converts alliin to allicin (allyl 2-propenethiosulfinate), a potent antibacterial agent. Allicin is unstable. When garlic bulbs are subjected to steam distillation, significant break down occurs. For complete explanation, see reference 36. Medicinal benefits for garlic bulbs used in food and garlic powder supplements differ dramatically. Data is equivocal regarding this topic. Medline Plus 2009 Consumer Info at www.fda.gov states that consumption of garlic should be unprocessed.</p>	
<p>(OCCAM) with a similar budget this year. The regulation of dietary supplements, vitamins, and herbs changed dramatically in 1994 with the passage of the Dietary Supplement Health and Education Act (DSHEA). A dietary supplement is defined as a product other than tobacco that is intended for use by humans to supplement the diet by increasing total dietary intake</p>	<p>and that contains one or more of the following ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, or a dietary substance. For the entire DSHEA, see reference.²² The use of supplements has increased significantly over the years, with more than 29,000 products exploding onto the market by the early years of the new millennium.²³ More than an additional</p>