

Dietary Supplements

**An information sheet from the Kentucky Council Against Health Fraud
www.kcahf.org**

Overview

Numerous products are sold for their supposed benefits in nutrition and in the prevention and treatment of disease. This sheet discusses some general aspects of supplements, and comments on some of the more popular products.

Dietary supplements (including *herbal remedies*) are regulated by a 1994 law that gave promoters considerable freedom to make *claims that are backed by little or no evidence*. As long as they do not refer to prevention or treatment of specific diseases, product labels may make vague "structure and function claims" *without approval by the Food and Drug Administration (FDA)*. They also *do not have to be shown to be safe*. The FDA lacks resources to pursue any but the most dangerous products or most outrageous claims. Thus, it is a *buyer beware* situation when it comes to the purchase of dietary supplements! Many products are being sold that are highly unlikely to be of any benefit. Some may be harmful.

Scientific assessment

General problems with some dietary supplements:

- High doses of vitamins, especially the fat-soluble vitamins A, E, and D, can cause side effects and toxicity.
- Many products are unlikely to survive the process of digestion, be taken up by the body, and be delivered to a place where they could be used. For example, proteins (including enzymes) will be broken down to amino acids, just like the proteins in your food.
- Products are sold that are unknown to have a role in human metabolism (for example, chlorophyll) or that can be made in the body and are not needed in the diet (for example, carnitine, creatine, coenzyme Q-10).
- Products are sold as superior sources of nutrients, but those nutrients that are truly needed can be obtained more readily from regular food (examples: blue-green algae, bee pollen, royal jelly, barley grass extract).
- Products may be sold by people with little knowledge in nutrition, or through impressive-looking web sites filled with scientific jargon, testimonials, references to scientific papers (often irrelevant to the claims), etc.
- Products may be recommended on the basis of inappropriate questionnaires or invalid diagnostic tests (hair analysis, iridology, applied kinesiology, live cell analysis) (see our separate sheet on these).

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Specific products (some products for weight loss are covered in our other handout, “Diets and Weight Loss”)

Androstenedione (“andro”) - a hormone taken to increase levels of testosterone. However, studies show that it does not increase strength and testosterone in men. It can produce many side effects and risks, and in 2004 the FDA ordered companies to stop selling it unless they can prove that it is safe.

Antioxidant vitamins (beta carotene and vitamin A; vitamin C; vitamin E) - considerable research suggests health benefits of these, in larger amounts than the Recommended Daily Allowances (RDAs), when obtained *in the diet*. However, controlled studies of *supplements* generally indicate no benefits. Large doses of vitamin C have not been found to work in preventing colds or treating cancer. The best recommendation at present is to obtain these vitamins (and other antioxidant compounds) from fruits and vegetables.

Chromium - an essential mineral, but requirement unknown. It is claimed that 90% of population is deficient in chromium, but there is no evidence for this. Claimed benefits of chromium supplements are not supported by evidence.

Coenzyme Q-10 - important in energy metabolism, but the body makes its own. Some research suggests supplements might help heart patients, but this is controversial. Possibly useful if you are taking statin drugs. Otherwise, no evidence of benefit for healthy individuals.

Colloidal minerals - an insoluble form of minerals obtained from shale. There is no reason that these would be absorbed better than other sources of minerals.

Creatine - appears to be useful for athletes engaging in short bursts of high-intensity exercise, but long-term effects unknown. No evidence of value for other forms of exercise or for ordinary individuals.

Dehydroepiandrosterone (DHEA) - a natural steroid hormone that declines with aging. Some studies indicate that it might produce beneficial effects, but more research concerning the long-term safety and benefits needs to be done before this supplement can be recommended.

Fish oils - these contain certain fatty acids (omega-3 fatty acids EPA and DHA) that appear to reduce the risk of heart disease, cancer, stroke, and other diseases. May be obtained by eating oily fish. Supplements are also being sold and these may turn out to be useful.

Garlic - promoted to lower cholesterol and for other conditions. There is some scientific support for these claims, though more research is needed.

Glucosamine and chondroitin sulfate - marketed as arthritis remedies. Both can be made in the body, so it is not clear why supplements would be useful. Some studies supported the use of glucosamine, while others did not find it to be beneficial. Chondroitin sulfate is a large molecule that is highly unlikely to survive digestion, be taken up, and go to the joints in a useful form.

Melatonin - a hormone produced by the pineal gland. Supplements may be useful in dealing with some (but not all) types of sleep problems. Other fantastic claims (e.g., treatment of cancer and Alzheimer's) are unsupported by evidence. Contrary to claims, it does *not* decrease with age.

Methylsulfonylmethane (MSM) - claimed to be an important source of dietary sulfur. This is false; we obtain sulfur from the amino acids cysteine and methionine. MSM has no known role in human nutrition.

Pyruvate - an important compound in metabolism, made within the body. Claimed to have some benefits, but the supportive studies come from a single researcher and apply to very special circumstances using large doses. No evidence of benefit from supplements to normal individuals.

S-Adenosylmethionine (SAM-e) - an amino acid derivative made within the body. Sold for arthritis and depression. Some scientific studies in support, but the medical community has not yet been convinced that it is useful.

Soy isoflavones - compounds found in soybean products that may have estrogen-like effects. Some women are taking for menopausal symptoms, but a recent study found no benefit. Potential danger of side effects.

Zinc - promoted for treatment of colds, but some studies have found no benefit.

For further information, see:

<http://www.quackwatch.org/01QuackeryRelatedTopics/DSH/supps herbs.html>

Recommendations

For most people, necessary nutrients can be obtained from a well-balanced diet. If you feel that you need supplements, vitamin and mineral supplements containing RDA levels should be sufficient without being toxic. Other products marketed as dietary supplements are, in general, unsupported by scientific evidence and should be avoided.

For information on dietary supplements, avoid web sites that are trying to sell you something. Instead, look for reliable sources such as government agencies or major medically-related organizations (such as the American Heart Association).

Many new studies on dietary supplements are being carried out, leading to changes in recommendations. Watch for news concerning supplements that you are interested in.

If you decide to take a supplement, be sure to discuss it with your physician. The supplement may interfere with the effectiveness of medications that you are taking, or the combination may produce side effects.

Recommendations of KCAHF are based on our assessments of the scientific literature concerning unconventional approaches to health care. For specific recommendations concerning your medical condition, consult your physician.

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