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Over-the-counter supplements for cholesterol lowering

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Over-the-Counter Supplements for Cholesterol Lowering

Introduction

Patients with hypercholesterolemia have an increasing number of options for over the counter products and heart healthy food promoted for cholesterol lowering effects. As the epidemic of hypercholesterolemia and heart disease continues, patients are finding themselves overwhelmed by the array of choices on pharmacy shelves. It is important for patients to remember that many of these products have limited safety and efficacy data available.

Policosanol

Policosanol is a product extracted from sugar cane wax, rice, wheat, yams, or beeswax. It acts by inhibiting cholesterol synthesis in the liver. Preliminary data indicates that 10 mg of policosanol is as effective as low dose statin therapy, *Zocor* 10 mg or *Lescol* 20 mg.[1,2] The majority of clinical studies on policosanol have been conducted in Cuba by a single research group. These studies used policosanol derived from sugar cane. It is not known if U.S. manufactured policosanol from sugar cane or policosanol from other plant sources is equivalent to the Cuban product. There is some evidence that wheat germ-derived policosanol 20 mg/day does not significantly lower cholesterol after four weeks of treatment.[3] The reason for this potential difference is unclear since wheat germ-derived policosanol is almost identical to sugar cane-derived policosanol. In a recent placebo-controlled study, rice-derived policosanol, in a dose of 10 mg/day over an eight week period, moderately decreased plasma total cholesterol and increased apoprotein A1.[22] More evidence is needed to determine the effectiveness of non-Cuban grown sugar cane-derived policosanol. A meta-analysis comparing efficacy of policosanol to that of plant sterol and stanol esters shows that policosanol is more effective, decreasing LDL approximately 24% compared to an 11% LDL reduction with plant esters.[4] Policosanol seems to be safe when used in doses of 10 mg to 20 mg per day for up to two years.[5] However, patients should be cautioned about antiplatelet effects which may interact with other medications.[5] Sugar cane-derived policosanol sources might be suggested for those desiring a policosanol-containing product. Sugar cane policosanol is included in: *One-a-Day Cholesterol Plus*, *CholeRx*, *Cholest-SP*, and others.[5] However, policosanol products are not a substitute for clinically proven prescription cholesterol lowering medications.

Plant Sterols and Stanols

Both plant sterols and stanols work by competing with cholesterol for absorption. Neither is well absorbed, but both are believed to have beneficial effects on cholesterol levels.

Plant sterols found in food products, such as *Take Control* and *Minute Maid Premium Heart Wise Orange Juice*, and supplements such as *Cholox*, have been shown to benefit total and LDL cholesterol levels. Beneficial effects are noted at doses of 1.3 grams daily, with a maximum benefit at two grams daily.[6] Studies have shown a 5% reduction in total cholesterol levels and a reduction in LDL of 9% to 20%.[7,8] Triglycerides and HDL levels do not appear to benefit from sterol use.

Stanols found in products like *Benecol* also reduce cholesterol levels. In order for a benefit to be seen a dose of at least two grams of plant stanols daily is recommended. Comparisons of different stanol formulations have shown total cholesterol reductions of 5% and LDL reductions of 8% to 10%.[9]

The most significant safety concern with sterols and stanols is a reduction in absorption of fat soluble vitamins.[10] While clinical trials have shown lower blood concentrations of beta carotene, alpha carotene, and vitamin E, these

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reductions do not appear to be clinically significant.[11]

For patients to see significant benefits of sterol and stanol therapy, the products must be used consistently. Patients may use these products with other cholesterol-lowering therapies.

Blond Psyllium

Blond psyllium husks are a source of natural soluble fiber. Psyllium is used as a bulk laxative in products such as *Metamucil,* as well as in a cholesterol lowering supplement, *Cholox plus Solos*.[12] When used in conjunction with a low-fat diet, psyllium supplements have shown a significant reduction in total cholesterol of 4% (ranges of 3% to 14%) compared to placebo, with no changes in HDL or in triglycerides.[13] Approximately ten grams daily divided into two or three doses appear equally as effective. Use of psyllium enriched cereals also offers similar benefits, a 5% reduction in total cholesterol and a 9% reduction in LDL levels.[14]

Soy Protein

Soy protein was recognized as a heart healthy food by the FDA in 1999. Products containing at least 6.25 grams/serving are allowed to make health claims. Studies have shown decreases in LDL of 6% to 18% and 6% to 10% in total cholesterol when between 20 and 47 grams of soy are consumed daily.[6] The benefits of soy are greatest when using soy as a food rather than a soy extract or isoflavone supplement.

Garlic

One supplement that is commonly promoted in the lay press and often included in multivitamin formulations is garlic. There is a large body of literature evaluating the effect of garlic supplementation on cholesterol levels. A meta-analysis of 13 randomized, controlled trials showed a reduction of 4% to 6% in cholesterol level with garlic as compared to placebo.[15] This fairly moderate benefit may be offset by the number of drug interactions noted with garlic. Garlic induces CYP3A4 and so has the possibility of interacting with many other medications a patient could be using. Because of the limited benefit and possibility of drug interactions, garlic products should not be generally recommended.

Red Yeast Rice

Taking red yeast orally can significantly lower total and low-density lipoprotein (LDL) cholesterol levels, and triglycerides when used for eight to 12 weeks.[16] The most commonly used dose is 2.4 grams per day, but a dose of 1.2 grams per day provides some benefit. Some research suggests that red yeast might be as effective as simvastatin (*Zocor*) for improving lipid profiles. Most studies used a specific proprietary red yeast product (*Cholestin*, Pharmanex).[16] While this formulation is no longer commercially available in the United States, some patients may still be getting the red yeast rice over the Internet. Red yeast rice products are available in health food stores. But there is insufficient reliable information available about the safety of red yeast when used orally, long-term.[16] Patients should be discouraged from using this product due to the fact that there is variability from batch to batch in the amount of active ingredient present. Patients should be made aware that the red yeast may affect liver function tests, and may interact with other cholesterol lowering agents, such as prescription statins.

Oats

The use of soluble fibers such as oats has been shown to modestly reduce total cholesterol and LDL by acting to prevent cholesterol absorption.[17] While reduction may vary based on the product, reported reduction of total cholesterol ranges are generally between zero and 18%.[18] It may be difficult to get the required amount of oats in dietary intake.

Niacin

Over-the-counter (OTC) niacin products work as well as prescription niacin if used in the same doses. OTC products come in much lower strengths than prescription products, so patients should be counseled that doses of 1,200 mg or more daily may be required for a beneficial effect.[19] While benefits are dose dependent, the greatest benefits are in triglycerides (20% to 50% reduction) and HDL levels (15% to 35% increase). Also most OTCs are not sustained-release formulations and so there is a greater risk of flushing. Many of the side effects of niacin can be lessened by utilizing smaller doses ($\leq$ 2,000 mg daily) and starting with a low dose and slowly

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titrating the dose upward.[20] Measures to reduce flushing include:

1. Administering 325 mg of aspirin (unless contraindicated) 30 minutes prior to niacin. (45 to 60 minutes if using enteric-coated aspirin).
2. Avoiding alcohol, spicy food, hot showers, and hot beverages shortly after dosing.
3. Avoid interrupting niacin therapy - flushing symptoms are likely to recur each time niacin is restarted.
4. Take niacin with food. This also helps to reduce gastrointestinal symptoms.

Most patients develop tolerance to the flushing with prolonged use of niacin, at which time aspirin use can be re-evaluated.[20]

All long-acting products (e.g., *Slo-Niacin*) are available over-the-counter as dietary supplements, and none have been approved by the Food and Drug Administration (FDA) for the treatment of hyperlipidemia. Long-acting niacin preparations should also be started at a low dose (e.g., 250 mg to 500 mg daily) and slowly titrated upward. A dose of 2,000 mg daily should not be exceeded. Long-acting preparations are the least desirable option because of a higher risk of hepatotoxicity.[20]

Extended-release niacin (e.g., *Niaspan*), available only by prescription, is a good option as it is dosed once daily, is associated with less initial flushing than immediate-release, and appears to have a reduced incidence of hepatotoxicity than long-acting niacin, but it is very expensive (up to $200/month).[20]

To avoid flushing, patients may be tempted to use the "no-flush" or "flush free" niacin (inositol hexaniacinate), however there is not a sufficient amount of niacin absorbed to provide therapeutic levels.[21]

Patients taking any form of niacin should have health professional check-ups and laboratory monitoring.[20]

Conclusions

There are a number of functional foods and dietary supplements that are promoted for cholesterol lowering. Among the most effective products are plant stanols or sterols, soy proteins, and policosanol. Other products that provide some benefit include: psyllium, oats, and niacin. While other agents may be appropriate for some patients, most patients should avoid garlic due to drug interactions, and red yeast due to product quality issues. For more information on these and other natural products used for cholesterol management, go to the *Natural Medicines Comprehensive Database*.

Patients need to remember that there is less regulation of standardization for product purity with supplements than with prescription products. For this reason it is necessary for patients to discuss the benefits and risks of self-treatment with their healthcare providers.

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