
hyperlipidemia Article: Top Herbal Products - pt 1

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alt.mothersgoose The following is posted for informational purposes only! ~~~~~ Top Herbal Products Encountered in Drug Information Requests (Part 1) Julie L. Muller, PharmD, and Kevin A. Clauson Abstract Alternative medicine is hitting the US like a storm. Sales of herbal medications now exceed \$1.5 billion a year and are increasing annually by about 25%. While herbal products have been used in other countries for many years, their popularity in the US has grown dramatically within the last 6 years. Consumers here are seeking alternative therapies to supplement modern conventional medicine. There are approximately 250,000 plant species in the world; of these, nearly 1800 are available for use in the US. This article reviews indications, dosing, side effects, and drug interactions of 4 of the big sellers (Echinacea, garlic, Ginkgo biloba, and ginseng). Introduction A variety of herbal drugs sell well in the US and Europe. Germany leads the way with approximately \$3 billion in annual sales, followed by the US, with \$1.5 billion in sales, Italy, the United Kingdom, Spain, the Netherlands, and Belgium. Studies have shown that about one third of the US population now uses some form of alternative therapy. Greater acceptance of herbal medicine may be attributed to increased appreciation of products termed organic and all natural; disenchantment with traditional medicine because of its inability to cure everything; fewer side effects perceived or observed with many gentle herbal remedies; and the relatively low cost of herbal products. In the US, pharmaceutical companies are generally not interested in funding clinical trials. However, in Germany, where herbal products are widely used, the German Federal Health Agency formed Commission E, a group of reputable scientists and practitioners with a mission to collect data on the safety and efficacy of commonly prescribed herbs. More than 300 monographs have been completed to date, and English translations are expected to be made available in 1998 by the American Botanical Council in Austin, Texas. In the US, the Dietary Supplement Health and Education Act of 1994 established a federal framework for the regulation of product labeling and information about dietary supplements. Dietary supplements are, for the first time, specifically defined to include vitamins, minerals, herbs and other botanicals, amino acids, and other dietary substances used to supplement the diet. The act also allows product labeling to contain a statement describing how the product's consumption affects structure or function or general well-being in humans. However, it does not permit a manufacturer to make a specific health claim for a product. The product label must carry the disclaimer: This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. The total quantity of all ingredients and the phrase dietary supplement must also be included on all labels. Clinical trials that have been designed to test currently used herbal preparations are laborious, time-consuming, and costly, and it is understandable why many herbal preparations on the market do not go through rigorous testing procedures. Nonetheless, many consumers have turned away from conventional medicines, believing that natural (though untested) substances such as herbs are safer than synthetic substances. Batch-to-batch variability, however, is a significant problem with herbal preparations. Companies that produce these preparations generally do not employ rigid quality controls, do not have adequate personnel or standards, and do not evaluate their products for purity and reliability. Contradictory pharmacologic effects have also been reported as a result of herbal preparations containing different subspecies of plants or having alterations in the chemical composition of active ingredients. Because herbal preparations are usually not evaluated for purity and consistency of active compounds, they often contain accidental contaminants, such as allergens, pollen, mold, and mold spores. In addition, some herbs are edible when immature but poisonous at maturity. In general, side effects from herbal products are minimal. Many consumers are entranced by the designation all natural and thus tend to believe that all herbal products are safe. They do not think of herbs as drugs. The consumer should be advised by providers of medicinal herbs to observe the proper dosage recommendations and stop taking the herbal product if any adverse effects occur. Other concerns regarding herbals involve their use by pregnant or nursing mothers and by young children and infants. There is not much information on drug (herb)-drug interactions, so people taking prescription medications should be cautious. The Botanical Safety Handbook published by the American Herbal Products Association contains labeling recommendations for 700 herbs commonly used in the US. A provider of herbal medicines should ask a consumer the following questions: Have you used this product before? Are you allergic to any plant products? Is this product for personal use or for someone else, such as a child or elderly patient? Are you pregnant or breast-feeding? Are you aware of the importance of closely following label instructions for dosages and duration of use? Are you taking prescription or nonprescription medications intended for the same purpose as this herb? Echinacea Echinacea, also known as purple coneflower, snakeroot, and hedgehog, is a member of the daisy family native to the central US. It was widely used by the Plains Indians as their most commonly employed healing herb. Originally known as a blood purifier and used to counteract blood poisoning, it was later observed to be beneficial in problems ranging from bee stings to chronic nasal congestion to leg ulcers. Echinacea is currently being marketed primarily for its effect of stimulating the immune system. The product has long been observed to be an immune-booster, used for reducing the duration of colds and flus and for providing prophylaxis against colds/flus when taken as soon as early symptoms are first noticed. It is also an antiinflammatory and is used for treating skin infections, burns, and postoperative wounds. Several different mechanisms have been proposed to explain Echinacea's immune-boosting properties, including stimulation of phagocytosis, increased motility of leukocytes, and increased T-lymphocyte and interferon production. Echinacea has no direct bactericidal or bacteriostatic properties; instead, it is an immunostimulant. The substance inhibits hyaluronidase activity and stimulates the activity of the adrenal cortex. Why Echinacea is responsible for these effects is still undergoing study. The inhibitory activity of lipoxygenase accounts for its antiinflammatory activity and justifies the use of the plant in infections. The therapeutic potential of Echinacea is worth the attention of both laboratory researchers and clinicians. There is little doubt about the plant's ability to potentiate the immune system; however, clinical research involving trials

of sound design and statistical significance is needed to assess the value of Echinacea treatments. Efficacy Trials Most of the scientific and clinical trials on Echinacea have been done in Germany, primarily with dosage forms prepared from the fresh above-ground portion of the plant that were administered by injection or applied locally. (Injectable preparations are not available in the US.) A recent double-blind, placebo-controlled study indicated that a daily dose of 450mg of Echinacea significantly relieved the severity and duration of flu symptoms. Another double-blind, placebo-controlled trial examined the immunostimulating influence of an Echinacea preparation on the course and severity of colds and flu-like symptoms in patients having a greater-than-normal susceptibility to infections. At a dose of 2 to 4mL a day, patients with diminished immune response (expressed by a low T4/T8 cell ratio) were found to benefit significantly from preventive treatment with the Echinacea preparation. A trial involving the use of an ointment containing Echinacea extract for the treatment of burns and postoperative wounds showed highly positive results. Echinacea is also used as a topical antiinflammatory therapy for insect bites as well as for the external treatment of hard-to-heal wounds, eczema, burns, psoriasis, and herpes simplex. Much more study on the efficacy of Echinacea for various conditions must be carried out before a definitive statement about efficacy can be made. Recent studies indicate that the plant does have pharmacologic activity and should be evaluated for clinical usefulness. Bastyr University (Bothell, Washington) was recently awarded a \$385,000 grant by AG Madaus of Cologne, Germany, to conduct a study on the effectiveness of Echinacea to treat respiratory infections. Safety Little is known about the toxicity and side effects of Echinacea. Studies have shown no chronic or acute toxic effects, even at very high doses (4gm/kg, injected intraperitoneally or intravenously). Occasionally the injection of Echinacea extracts has been followed by a feverish reaction. Side effects appear to be limited to infrequent allergic reactions. Echinacea is contraindicated in progressive systemic disorders such as tuberculosis, leukosis, collagenosis, multiple sclerosis, HIV infections, and other autoimmune diseases. Potential consumers of Echinacea should make every effort to obtain the best-quality product available. Careful investigation of the reputation of the manufacturer should precede the purchase of this herb. Dosage The dosage of Echinacea depends on the potency of the particular sample or preparation. The producer of a typical American hydroalcoholic preparation recommends 15 to 30 drops 2 to 5 times daily. Germany's Commission E recommends 8 to 9mL daily of the juice from the above-ground portions of the plant. The dosage of capsules, tablets, or tincture (hydroalcoholic preparation) is 1g 3 times daily. In the US, commercially available products are usually 380-mg capsules, and the recommended dosage is 1 to 3 capsules 3 times daily to be taken with water at mealtimes. Garlic Garlic is the one herbal product currently marketed in the US whose effects are well supported by scientific and clinical evidence. It is a member of the lily family, and commercial products are available in several different formulations. Allicin, a derived product formed by enzymatic action from alliin (a crystalline amino acid occurring in garlic oil) is generally considered the most important biologically active compound. When the bulb is crushed or bruised, alliinase converts alliin to allicin. The schematic in Figure 1 shows the chemical reaction that occurs with crushing or chewing of the bulb. Cooking (heat) and acid destroy the activity of the enzyme; therefore, the benefits of garlic are obtained when it is ingested raw. Unfortunately, the daily dose of raw garlic required for therapeutic efficacy results in halitosis. There are many different indications for garlic; it is used as therapy for atherosclerosis and as an antibacterial, antiviral, and antifungal agent. It is also used to treat mild hypertension, hypercholesterolemia, and fibrinolysis, and also may have some anticancer properties. However, garlic is most effective in blood lipid reduction. Efficacy and Safety Trials: Hyperlipidemia Since 1975, there have been more than 32 human studies demonstrating the lipid-lowering effects of garlic. The majority of these were completed with a garlic powder tablet that is standardized to 1.3% alliin. The daily dosage ranged from 600 to 900mg, and the duration of the studies ranged from 4 to 16 weeks. Patients with high cholesterol, high triglycerides, or both, were included in the study. Dutch investigators have evaluated the methodologies and results of 18 controlled trials examining the effects of garlic on the reduction of cholesterol, increased fibrinolytic activity, and inhibition of platelet aggregation. They concluded that high doses, approximately 5 to 20 average-size cloves (4g each) of garlic daily, would be required for improving arteriosclerosis and coronary artery disease. Results with commercial garlic preparations were equivocal. However, much smaller doses (less than 5 cloves) were effective in the treatment of hyperlipidemia. A 16-week study involving 261 patients with total cholesterol and/or triglyceride values exceeding 200mg/dL showed that daily administration of 800mg of garlic powder (standardized to 1.3% allicin content) reduced cholesterol values by an average of 12% and triglyceride values by 17%. Assuming that fresh garlic yields, on average, 0.37% allicin, the 10.4mg contained in the 800mg of garlic powder ingested daily is equivalent to only 2.8g of fresh garlic, which is less than 1 average-size clove. A double-blind crossover study in moderately hypercholesterolemic men compared the effect of aged garlic extract and placebo on blood lipids. The study included 56 men, 32 to 68 years of age, with total cholesterol levels between 220 and 290mg/dL. All participants were advised to follow the National Cholesterol Education Program Step 1 Diet for the duration of the study. After a 4-week baseline period in which lipid profiles (total, HDL-C, LDL-C, and triglycerides) were analyzed at weekly intervals, the subjects were randomly assigned to 1 of 2 study arms to receive either placebo or aged garlic extract (AGE) capsules. The treatment was taken in 3 divided doses with meals for a period of 6 months, during which time lipids were analyzed 6 times. Then, the subjects were switched to the other treatment for a period of 4 months, during which lipids were analyzed 5 times. Blood chemistry, serum creatinine, thyroid, and liver functions were checked 4 times, once during the baseline period, twice during the first treatment period, and once at the end of the second treatment period. Blood pressures were also recorded manually. An allergy to the coating material of the capsules, various gastrointestinal complaints, difficulties in taking the required number of capsules, and perception of unusual body odor resulted in 15 men withdrawing from the study. Study participants showed an average 6.1% reduction in total serum cholesterol concentrations during the placebo administration and a 7.0% reduction from their baseline values. LDL-C values showed a 4% reduction when the average of both study arms was compared with baseline values; there was a 4.6% reduction when compared with average placebo concentrations. Although HDL-

C and triglyceride concentrations were not significantly changed by either treatment, the ratio of HDL to total cholesterol across study arms showed a significant increase ($P=0.0145$) after AGE compared with placebo. Systolic blood pressures were 5.5% lower with AGE treatment than the average pressures with placebo supplementation ($P=0.003$ in arm 1; $P=0.0001$ in arm 2). Diastolic blood pressures were also significantly reduced during the AGE treatment period compared with baseline ($P=0.0001$) and with placebo ($P=0.026$). Results of this study support the premise that AGE is a safe supplement that does not alter blood counts, chemistry, or thyroid function but lowers total cholesterol and LDL-C and leads to a beneficial reduction in blood pressure. Two meta-analyses have examined the major clinical trials of garlic therapy for hyperlipidemia. They indicated that doses from 600 to 900mg of garlic powder daily for a duration of 1 to 3 months reduced total serum cholesterol by 9% to 12% and lowered serum triglycerides by 8% to 27%. The meta-analysis by Warshafsky and colleagues assessed the significance and consistency of garlic's effect on total serum cholesterol in persons with levels greater than 200mg/dL. Garlic was shown to lower cholesterol levels by about 9%, as compared with placebo. Study characteristics of the 5 included trials are summarized in Table 1. The meta-analysis included persons with both primary and secondary hyperlipidemia as well as those with hyperlipidemia of varying definition (most patients were between 49 and 58 years). Although the groups studied represented a wide variety of lipoprotein abnormalities, they reflected the broad spectrum of patients with borderline and high cholesterol levels who present to a clinician's office. All trials randomized subjects to receive either an oral garlic preparation or placebo. None of the trials placed any dietary restrictions on participants. One trial excluded patients receiving lipid-lowering drugs from statistical analysis; 3 trials excluded patients who were receiving lipid-lowering drugs before the initiation of the trial; and 1 trial excluded participants receiving any medications. Although a significant reduction in cholesterol was detected by the meta-analysis, the overall design of the included studies weakened the validity of the findings. For example, future studies should incorporate placebos that look, taste, and smell like their garlic counterparts and that also incorporate dietary habits or restrictions. Additionally, the meta-analysis of the controlled trials of garlic's effect in reducing hypercholesterolemia showed a significant reduction in total cholesterol levels; however, LDL subfraction has been shown to be a more precise marker of cardiovascular risk than total cholesterol. Therefore, future studies should use LDL subfraction as the primary outcome measure. Another double-blind study of 42 subjects evaluated the effect of standardized garlic powder tablets on serum lipids and lipoproteins, glucose, and blood pressure over a 12-week period. The subjects were randomized to receive either 300mg of standardized garlic powder tablets 3 times daily or placebo. Diet and physical activity were unchanged. A fasting-state lipid profile was completed at the beginning of the study and then repeated at weeks 6 and 12. Two sitting blood-pressure measurements and a pulse rate were taken after 10 minutes of rest at each clinic visit. No significant treatment differences in the measured parameters were seen at week 6 between the garlic and placebo groups. However, serum total cholesterol at week 12 was lowered by 6% in those taking the garlic tablets as compared with placebo ($P<0.01$). In particular, LDL cholesterol decreased by 11% in the garlic-treated group and by 3% in the placebo group ($P<0.05$). HDL cholesterol, glucose, blood pressure, and body weight did not change significantly. Only 1 patient complained of increased belching with garlic taste, and 2 placebo-group patients had mild abdominal discomfort. In general, garlic tablets were well tolerated and did not pose a significant odor problem. One study evaluated the efficacy of an intravenous administration of commercial garlic extract (1mg/kg diluted in 500mL of saline per day) over 4 hours to 2 patients with chronic meningitis, 2 patients with viral meningitis, and 1 patient with chronic meningitis. There was a 2-fold increase in anti-Cryptococcus neoformans activity in 4 of 5 cerebrospinal fluid samples.

Dosage For therapeutic purposes, it is recommended to chew 1 clove of raw garlic daily, which should provide at least 5000mcg alliin. Treatment of cholesterol levels should be evaluated over a 3- to 6-month period. Odor-controlled, enteric-coated garlic powder supplements can be used for those who object to raw garlic's odor.

Side Effects Daily consumption of moderate quantities of garlic should not pose any health risk to healthy people. The larger doses (more than 1 clove a day) required for therapeutic efficacy can cause heartburn, flatulence, garlic aftertaste or odor, and related gastrointestinal problems. Since garlic reduces blood-clotting time, persons taking aspirin or other anticoagulant drugs should avoid eating large amounts. There are rare reports of allergic reactions to garlic. There are no known contraindications to the use of garlic during pregnancy and lactation.

Ginkgo Biloba The ginkgo is the world's oldest living tree species and can be traced back more than 200 million years to the fossils of the Permian period. A plantation in Sumter, South Carolina, contains 10 million ginkgos on 1000 acres. The effects of a standardized Ginkgo biloba extract (GBE) center on its active constituents: ginkgo flavone glycosides (bioflavonoids) and the terpene lactones (ginkgolides and bilobalide). The bioflavonoids are primarily responsible for GBE's antioxidant activity and its ability to inhibit platelet aggregation. The terpene lactones improve circulation and also inhibit platelet-activating factors. The 3 primary actions of GBE on the cardiovascular system include: (a) anti-ischemic action and relief of arteriolar spasm; (b) counteracting platelet and erythrocyte hyperaggregability; and (c) allowing for better glucose and oxygen uptake under ischemic conditions, thereby stimulating aerobic glycolysis and promoting lactate clearance. Recent studies have also indicated neuroprotective properties. Numerous pharmacologic and clinical studies have shown that ginkgo has a positive effect on various circulatory disorders by increasing vasodilation and peripheral blood flow rate in capillary vessels and end arteries. Varicose conditions, post-thrombotic syndrome, chronic cerebral vascular insufficiency, short-term memory loss, cognitive disorders secondary to depression, dementia, tinnitus, vertigo, and obliterative arterial disease of the lower limbs are among the disorders that benefit from ginkgo therapy. There is also support for the use of ginkgo as an effective free-radical scavenger. A recent retrospective critical review analyzed the quality and methodology of 40 trials published since 1975 on the use of ginkgo extract to treat cerebral insufficiency. For most of the studies, the GBE dosage was 120mg a day given for at least 4 to 6 weeks. Of the 40 studies, only 3 were considered well performed. Clinical studies have demonstrated the efficacy of GBE in the management of cerebral insufficiency (Table 2). Patients using daily doses of 120 to 240mg of GBE showed

improvement in symptoms within 6 to 12 weeks. The potential of GBE for the treatment of dementia of arteriosclerotic origin and also for persons recovering from strokes is worth noting. GBE has shown efficacy in geriatric patients with resistant depression who are not responding to standard drug therapy. Recent research has also showed promising results in the early stages of senile dementia of the Alzheimer's type. GBE has also been used as an intervention for persons with intermittent claudication. In doses of 120 to 160mg daily for 3 to 6 months, GBE was associated with an increase in pain-free walking distance and increased blood flow to the affected limbs. Two other trials evaluated the use of ginkgo for the treatment of intermittent claudication. One 6-month trial consisted of patients (average age 61 years) with Fontaine's stage IIb who received GBE or placebo. Results showed that walking distance on a treadmill increased 98% in the GBE group, as compared with only 21% in the placebo group. In another trial, patients (average age 65 years) with pain at rest were given GBE 200mg daily for 8 days. The GBE group had a 51% decrease in pain intensity by subjective report, whereas the placebo group only experienced a 25% decrease. No serious adverse events were reported in either trial, and side effects were similar for both the GBE and placebo groups. The daily dose for GBE is 120-160mg. Side effects from GBE are few and mild. Infrequently, gastrointestinal disturbance, headache, and allergic skin reaction may occur. Very large doses may cause restlessness, diarrhea, nausea, and vomiting. There are no known interactions with commonly prescribed drugs, although 1 report states that because ginkgo reduces blood-clotting time, its use may be of concern to those already taking anticoagulants. The current Commission E monograph lists no contraindications to the use of ginkgo during pregnancy or lactation. Ginseng

Ginseng can be a misleading term because of the multitude of varieties that are grown and sold. Ginseng, classically referred to as *Panax ginseng*, is also called Korean, Chinese, and even Asian ginseng. There are also 4 closely related species: *Panax quinquefolium* (American ginseng), *Panax japonicum* (Japanese ginseng), *Panax pseudoginseng* (Himalayan ginseng), and *Panax trifolium* (dwarf ginseng) and 1 distant cousin, *Eleutherococcus senticosus* (Siberian ginseng). *P. ginseng*, one of the true ginsengs, and *E. senticosus* are considered the most important species of this herb because of the frequency of their use and the amount of research done on them. These species were initially classified as adaptogens (defined as a substance that is innocuous and causes minimal disorders in the physiologic functions of an organism; has a nonspecific action (ie, it increases resistance to adverse influences by a wide range of physical, chemical, and biochemical factors); and usually has a normalizing action regardless of the direction of the pathologic state. Adaptogens are differentiated by their composition/mechanism of action. *P. ginseng* is by far the more complex of the 2 species, with at least 13 identified constituents called ginsenosides. One should keep in mind when reviewing literature that these ginsenosides have different Japanese and Russian names. For example, the Russian language calls ginsenosides panaxosides; ginsenoside Rc corresponds to panaxoside D. *Eleutherococcus* contains components termed eleutherosides A-G. Other than their activities as adaptogens, Chinese and Siberian ginseng do not have any appreciable usage overlap. It has been suggested that Siberian ginseng generally yields better results and has fewer side effects. This, in part, has been attributed to Siberian ginseng's lack of estrogenic activity, unlike the *Panax* genus. However, this is by no means universally accepted. The most promising application of Chinese ginseng (hereafter simply referred to as ginseng) appears to be in the treatment or prophylaxis of nonspecific conditions such as stress-related disorders, age-related conditions, and physical and mental fatigue. In addition, it has been used for the treatment of specific conditions such as diabetes and menopause. Ginseng appears to have a modulating effect on the hypothalamic-pituitary-adrenal axis (HPA) by inducing secretion of adrenocorticotrophic hormone (ACTH), which assists in the production and secretion of certain adrenal hormones. Ginseng actually has an analogous relationship to many of the body's own homeostatic control mechanisms. Research indicates that ginseng has several secondary actions that adjust the metabolic actions of the body in times of stress. Ginseng has shown promise in combating age-related disorders by increasing the life span of cells in culture and by stimulating nerve growth factor, which normally becomes deficient with advanced age. Perhaps the most widely cited reason for using ginseng is its purported ability to help the body compensate for physical and mental fatigue. For example, athletes use it to increase physical endurance, and students use it to avoid physical and mental fatigue and to improve cognitive functions. In a double-blind, randomized, crossover study, a ginseng preparation taken daily for 6 weeks improved the performance and work capacity of athletes, compared with a matched placebo group, by enhancing cardiovascular response both during and after strenuous physical activity and by improving muscular oxygen utilization. An Italian, double-blind, crossover study comparing ginseng to a placebo examined the psychomotor skills of healthy university students. The students taking ginseng showed a statistically significant improvement over their initial baseline scores in areas such as arithmetic, deductive logic, and sensory-motor function. The aforementioned specific uses for ginseng are but a few of the dozens for which it is taken; the very name *Panax* is derived from panacea, or cure-all. Notably, it is not the ginsenosides that are the pharmacologically significant component of ginseng used in the treatment of diabetes. Instead, other substances within the herb, including panaxans, adenosine, and DPG-3-2, are responsible for its hypoglycemic activity. Additionally, a 1980 study reported in the *British Medical Journal* demonstrated the estrogen-like activity that ginseng exerts on the vaginal epithelium, thereby ameliorating some of the symptoms of menopause. The acceptance of the herb has been a long journey. Two major articles condemning ginseng shook the faith of consumers and health professionals, and even coined the term Ginseng Abuse Syndrome. A 1979 article in the *Journal of the American Medical Association* helped tarnish the herb's credibility by denouncing it and warning of serious side effects during a period when Eastern medicine was making a serious push into mainstream America. Later, the study was revealed to have been poorly designed and conducted: Data were based on interviews with psychiatric patients who claimed they took ginseng, which was never confirmed, but who were also taking caffeine and possibly illicit drugs. One of the problems in the manufacture of ginseng within the herbal medication industry is the lack of quality control and standardization. A study in 1979 conducted by a health food trade journal, *Whole Foods*, evaluated 54 ginseng products in various health food stores; the study determined that 60% of the products had too little ginseng to have any

action, and 25% had no detectable quantity of ginseng at all. Since then the industry has tried to self-regulate, if for no other reason than to avoid having the government intercede. But there are still variations, and the consumer's best option is researching the company and holding the label up to careful scrutiny. A great deal of variation exists among regimens in both the suggested dosing quantities and the interval length. The species and strengths of the dose can be tailored to match the appropriate treatment, but a generally accepted safe dose for all of the Panax available is 100mg once to twice daily (standardized to give approximately 5% ginsenosides). For Siberian ginseng (the 33% fluid extract) the recommended dose is 2.0 to 4.0mL, 1 to 3 times daily. Perhaps the most important aspect of dosing, and the only universally accepted practice, is to space out the doses at regular intervals. If ginseng is to be taken long term, a period of 1 to 2 weeks of abstaining from the herb is recommended every 2 to 3 weeks for Chinese ginseng and every 5 to 7 weeks for Siberian. The incidence of side effects for ginseng is low; insomnia and nervousness usually occur at inappropriately high dosage levels. It is contraindicated in individuals who have asthma, emphysema, fibrocystic breasts, high blood pressure, clotting problems, and cardiac arrhythmia, as well as in pregnant or lactating women. Conclusion Herbal products have become more popular as consumers seek relief of common symptoms from sources other than their own physician, despite the fact that (for some) there is very little research regarding the safety and efficacy of these products. Practitioners of allopathic medicine are now recognizing the widespread use of herbal products among their own patients, and more clinical studies are likely underway. Allopathic clinicians, as a rule, are not very familiar with herbal agents but will benefit their patients by being able to discuss these products with them. Dr. Muller is Assistant Professor and Assistant Director, Drug Information Center, University of Tennessee, College of Pharmacy, Memphis, Tenn. Mr. Clauson is a PharmD candidate at the University of Tennessee, Memphis.

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