

HERBAL MEDICINE



Herbs are defined botanically as a specific subgroup of plants, but herbal supplements are loosely defined as any plant-containing or plant-derived product. Herbal remedies have been commonplace in various cultures throughout recorded history, and still serve as the main means of therapeutic medical treatment in some. The use of herbal remedies is commonly referred to as “unconventional” or “alternative” medicine. The prevalence of alternative medicine in several United States surveys ranges from 10% to 40% and sales of herbal supplements are a multi-billion dollar industry, which is growing rapidly.

Because herbal supplements are neither food nor drug, they escape the jurisdiction of the Food and Drug Administration (FDA) and are thus held to minimal standards. There is rising concern among consumer advocates and health care providers alike regarding the lack of governmental regulation and surveillance of herbal products, mainly due to the potential for endogenous toxicity and drug interactions. There have been multiple cases of toxicity in recent years, prompting more National Institute of Health (NIH) funding for appropriate investigations of the possible efficacy or harm of these supplements. The FDA plans to have a scientifically based program established by the year 2010 to regulate the safety and labeling of these types of products. Currently, most data on use and toxicity of herbal supplements comes from surveys and anecdotal case reports, and much knowledge is obviously lacking. For this reason, risk-benefit assessments of herbal supplements are not completely reliable. The following is a brief overview of some of the most commonly used herbal supplements and their potential toxicities.

***Ginkgo* (*Ginkgo biloba*; Fossil tree, Ginkyo, Yinhsing, Kew tree, Maidenhair tree)**

Proposed indications: dementia, vertigo, tinnitus, vascular insufficiency syndromes including intermittent claudication and Raynaud’s disease, and cognitive disorders.

Possible mechanism of action: competitive inhibition of platelet –activating factor which decreases blood viscosity leading to improved microcirculatory blood flow

Side effects: mild gastrointestinal (GI) symptoms, headache, dizziness, palpitations, and allergic skin reactions

Toxicity: restlessness, nausea, vomiting, diarrhea, weakness, and bleeding complications

Drug interactions: may cause increased risk of bleeding in patients on anticoagulant or antiplatelet medications, may cause hypertension when used concomitantly with thiazide diuretics

Treatment: supportive care



***St. John’s Wort* (*Hypericum perforatum*; Amber, Demon Chaser, Goatweed, Tipton Weed)**

Proposed indications: depression, antiviral agent, mood disturbances associated with menopause, and migraine headache

Possible mechanism of action: serotonin reuptake inhibition

Side effects: mild GI symptoms, insomnia, allergic reactions and anxiety

Toxicity: phototoxicity, serotonin syndrome

Drug interactions: may cause serotonin syndrome when used concomitantly with selective serotonin reuptake inhibitors, may induce the cytochrome P450 enzyme system and transport glycoproteins resulting in decreased serum levels of certain medications such as oral contraceptives and digoxin

Treatment: supportive care unless serotonin syndrome present and then treat with benzodiazepines

Garlic (Allium sativum; Ajo, Nectar of the Gods, Stinking Rose, Poor Man's Treacle)

Proposed indications: prevention of atherosclerosis, reduction of high blood pressure, immune system stimulation, and treatment of hyperlipidemia

Possible mechanism of action: may act as a HMG-CoA reductase inhibitor to reduce serum cholesterol, may promote smooth muscle relaxation and vasodilation by activating production of endothelium derived relaxation factor, may have antithrombotic effects leading to decreased platelet aggregation and increased fibrinolytic activity

Side effects: mild GI symptoms, breath odor

Toxicity: mostly associated with dermal exposures resulting in dermatitis or eczema, a few cases of bleeding complications secondary to high dietary garlic consumption

Drug interactions: may enhance the effects of anticoagulant and antiplatelet medications

Treatment: supportive care

Echinacea (Echinacea; American Cone Flower, Black Susans, Snakeroot, Hedgehog, Indian Head)

Proposed indications: prevention and treatment of respiratory tract infections and general immune system stimulation

Possible mechanism of action: may increase phagocytosis and promote lymphocyte activity leading to increased production of TNF, may have antiviral activity

Side effects: mild GI symptoms, fever, and allergic reactions

Toxicity: severe allergic reactions have included anaphylaxis, acute asthma exacerbations, and angioedema

Drug interactions: theoretically, it may decrease the effectiveness of immunosuppressant medications

Treatment: supportive care

Saw Palmetto (Serenoa repens; Cabbage Palm, American Dwarf Palm, Sabal, Palmier Nain)

Proposed indications: urinary symptomatology associated with benign prostatic hypertrophy

Possible mechanism of action: may have antiandrogen activity and alpha-adrenergic inhibitory effects

Side effects: mild GI symptoms, headache, decreased libido

Toxicity: No significant toxicity known

Drug interactions: may interfere with oral contraceptives and hormone therapy

Treatment: supportive care

Kava-Kava (Piper methysticum; Kava, Awa, Intoxicating Pepper, Kava Pepper, Tonga)

Proposed indications: anxiety disorders, stress, insomnia, and restlessness

Possible mechanism of action: controversial, may enhance GABA binding in the amygdala

Side effects: mild GI symptoms, headache, dizziness, allergic reactions, enlarged pupils, drowsiness,

mouth numbness if chewed

Toxicity: kava dermatopathy (a pellagra-like syndrome characterized by flaking skin, reddened eyes, and yellow discoloration of the skin), chronic use leads to overall poor health, low body weight, puffy face, scaly rashes, hematuria, decreased platelets and lymphocytes, toxic liver damage (several cases), and possible pulmonary hypertension

Drug interactions: concomitant use of alcohol and/or other CNS depressants may result in additive effects

Treatment: supportive care

Ginseng (Panax ginseng; Asian Ginseng, Chinese Ginseng, Oriental Ginseng, Red Ginseng)

Proposed indications: fatigue, ulcers, stress, impotence, to increase athletic performance/stamina, to improve cognitive function, stimulate immune function

Possible mechanism of action: “ginsenosides” different types may either stimulate or depress CNS, may stimulate natural-killer cell activity, inhibit platelet activity, may exert papavarine-like effect on smooth muscles, antioxidant effects, may alter carbohydrate metabolism, may have some androgenic properties

Side effects: insomnia, nervousness, tachycardia, headache, hypotension, GI upset

Toxicity: “Ginseng Abuse Syndrome”: apparent aggressive behavioral changes/HTN in over users—questionable if exists

Drug interactions: may interact with coumadin (2 case reports), may affect hypoglycemic agents, may potentiate HTN c concomitant caffeine use, theoretically may affect antipsychotics, caution use c MAOIs

Treatment: supportive care

Pennyroyal oil (Mentha pulegium; Lurk-In-The Ditch, Squaw Balm, Tickweed, Run-By-The-Ground)

Proposed indications: abortifacient, antispasmodic, antiflatulent, stimulant

Possible mechanism of action: contains pulegone—metabolites may cause hepatocellular damage by producing toxic metabolites which deplete glutathione stores similar to acetaminophen toxicity, may cause uterine contractions due to genito-urinary tract irritation

Side effects: abdominal pain, nausea, vomiting, and dizziness

Toxicity: altered mental status, seizures, hypertension, acidosis, disseminated intravascular coagulation, abortion, hepatic failure, renal failure, respiratory failure, shock, and death

Drug interactions: No known drug interactions

Treatment: Theoretically, NAC may be useful in preventing hepatic failure (same dose as APAP, may d/c in 24 hrs if no hepatotoxicity)

Ephedra (Ephedra sinica; Desert Herb, Ma-Huang, Sea Grape, Yellow Horse, Cao Mahuang)

Proposed indications: appetite suppressant, central nervous system stimulant, nasal congestion, and bronchospasm

Possible mechanism of action: acts directly and indirectly to stimulate the sympathetic nervous system

Side effects: mild GI symptoms, dizziness, anxiety, insomnia, headache, anorexia, flushing, difficulty urinating, heart palpitations

Toxicity: “sympathomimetic syndrome”, tachycardia, hypertension, hyperthermia, agitation, altered mental status, heart failure, rhabdomyolysis, eosinophilia-myalgia syndrome, acute hepatitis, hypersensitivity myocarditis, myocardial infarction, psychosis, seizure, stroke and death

Drug interactions: concomitant use with caffeine or any other sympathomimetic medications increases the risk of toxicity, may elevate blood glucose levels and interfere with drug therapy for diabetes, case report of hypertensive crisis and subarachnoid hemorrhage after use with MAOI; two case reports of mania and psychosis

Treatment: cardiac monitoring, benzodiazepines, and antihypertensives as needed

Oleander (Nerium Oleander; Oleanderblatter, Oleandri folium, Rose Bay, Rose Laurel, Yellow Oleander)

Proposed indications: cardiac conditions, asthma, epilepsy, cancer, and dysmenorrhea

Possible mechanism of action: contains cardiac glycosides which have positive inotropic and negative chronotropic actions; at toxic levels, these cardiac glycosides can cause increased automaticity, bradycardia, and heartblock

Side effects: mild GI symptoms, headache, weakness, abdominal pain, bitter taste, increased salivation

Toxicity: malignant dysrhythmias, cardiovascular collapse, cardiac arrest, hyperkalemia, and death

Drug interactions: Calcium salts may enhance effects, increased risk of toxicity when used with cardiac glycosides and/or other cardiac medications

Treatment: anti-digoxin Fab fragments have been used successfully to reverse the effects of oleander toxicity

Aconite (Aconitum napellus; Blue Monkshood Root, Monkshood, Wolfsbane)

Proposed indications: arthritis, joint pain, facial paralysis, skin diseases, rheumatic complaints

Proposed mechanism of action: aconitine produces effects similar to cardiac glycosides, but mainly through opening cardiac and neuronal sodium channels

Side effects: nausea, vomiting, weakness, paresthesias, palpitations

Toxicity: life-threatening arrhythmias, hypotension, respiratory acidosis

Drug interactions: increased risk of toxicity when used with cardiac glycosides and other cardiac medications

Treatment: cardioversion has been reported to be ineffective, questionable effect of antiarrhythmic meds; no reported use of anti-digoxin Fab fragments; supportive care

Herbal supplements are readily available in the U.S. in many forms and sales are increasing at a rapid rate. Their relative lack of regulation, coupled with the lack of safety information regarding these products, makes previously reported misuse and toxicity very likely to continue. Clinicians must be alert to toxic syndromes that these agents may cause, both by themselves and when combined with established therapeutic medications.

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